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'727 Captain'
FLIGHT MANUAL

PART II – Aircraft and Systems

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ABOUT THIS MANUAL

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The '727 Captain' FLIGHT MANUAL is organized into three Parts.
Each Part is provided as a separate Acrobat® PDF document:

Click START > Programs > Captain Sim > 727 Captain >

- **Part I – User's Manual**
- **Part II – Aircraft and Systems** - this document.
- **Part III – Operations**

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727-100 PRO PACK FLIGHT MANUAL

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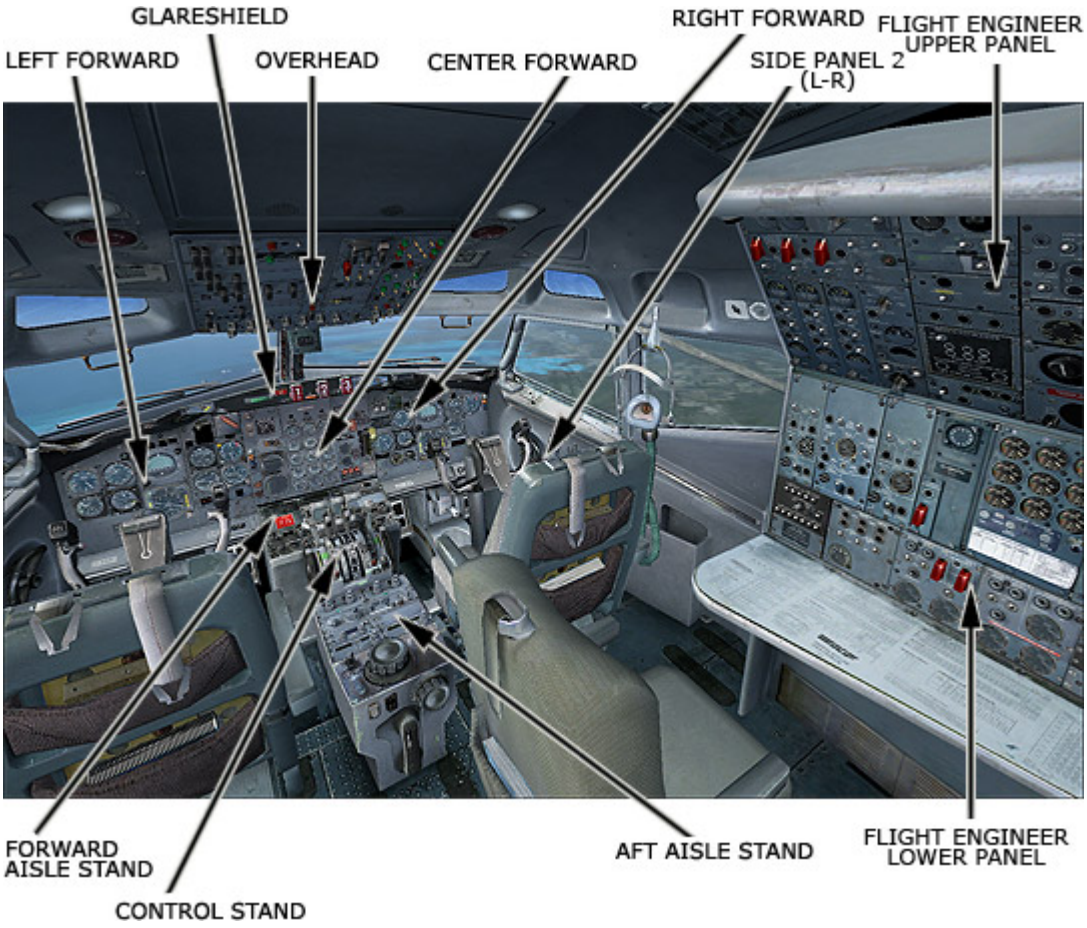
PANELS LAYOUT



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LEFT FORWARD PANEL

L01. Machmeter Indicator
L02. Clocks
L03. Autopilot Disengaged Warning Light
L04. Airspeed Indicator
L05. Radio Magnetic Indicator (RMI)
L03, 06, 09. Annunciators
L07. Attitude Director Indicator (ADI)
L08. Horizontal Situation Indicator (HSI)
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L12. Pneumatic Brake Lever
L13. Height Indicator
L14. Electric Altimeter
L15. DME Indicator and Windshear Ahead Lights

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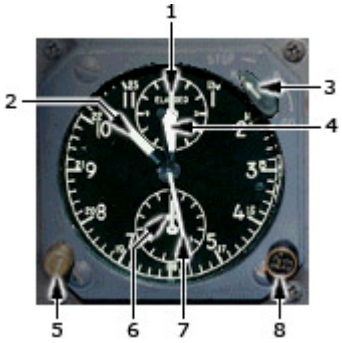
L01. MACHMETER INDICATOR

1 – Mach Pointer

2 - Mach Limitation Mark

The airspeed indicator and the mach meter are separate indicators and they are pitot static operated (pneumatic). There is no standby mach/airspeed indicator installed when only pneumatic instruments are installed.

L02. CLOCKS



1. Elapsed Time Hours Minutes Hands

2,4. Hours And Minute Hands

3. Elapsed Time Switch

5. Winding & Setting Control

6. Lower Minute Register Hand

7. Sweep Second Hand

8. Push Button

1. Elapsed Time Hours Minutes Hands

Controlled by elapsed time switch.

2,4. Hours And Minute Hands

Reset by knob on lower lefthand corner of clock

3. Elapsed Time Switch

- Rotating switch clockwise to 0 resets elapsed time hands to 12 o'clock position.
- Rotating switch clockwise to GO starts elapsed time hands.
- Rotating switch clockwise to STOP stops elapsed time hands.
- Do not move switch counter clockwise from GO to 0 or from 0 to STOP.

5. Winding & Setting Control

Winds clock when turned clockwise.

One complete winding good for 8 days. With knob pulled out, turning in either direction will set main hour and minute hands.

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6. Lower Minute Register Hand

Controlled by push button.

7. Sweep Second Hand

Controlled by push button on lower right-hand corner of clock.

8. Push Button

With sweep-second hand at the 12 o'clock position:

- Pushing button once starts the second hand, pushing a second time stops the hand, pushing a third time resets hand to 12 o'clock position.
- Minute register hand indicates elapsed time In minutes of sweep second hand.

L03. AUTOPILOT DISENGAGED WARNING LIGHT

1. Autopilot Disengaged Warning Light

A red light (press-to-test and reset) marked AUTOPILOT DISENGAGED is on both the Captain's and the First Officer's panel. With the autopilot engaged, the lights will come on flashing any time either or both channels of the autopilot become disengaged for any reason.

Note:

An interchangeable autopilot component may be installed, which will cause the autopilot disengaged warning lights to illuminate any time power is applied to the airplane or any time power is switched to airplane power.

The lights can be extinguished by depressing the autopilot disengaged warning light on the Captain's or First Officer's panel, or by firmly depressing either autopilot release switch on either control wheel.

Note:

If a failure occurs in the elevator (pitch) channel, use the autopilot disengaged warning light (reset) to extinguish and rearm the lights, and it will not disengage the operating aileron (roll) channel.

The autopilot warning lights will illuminate steadily when any one of the self-test switches of the control channel boxes in the lower 43 compartment is not in the off position. The lights cannot be extinguished except by positioning the switch to OFF.

The lights can be tested by depressing the light on the Captain's or First Officer's panel. The depressed light will illuminate steadily, while the remaining light will flash. The lights can also be tested by the master test and dimming switch.

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L04. AIRSPEED INDICATOR

1. V_{MO} Pointer
2. Airspeed Pointer
3. Movable External Reference Marker
4. Cursor Control
5. V_{MO} Mode Selector

1. V_{MO} Pointer

Displays maximum operating airspeed.

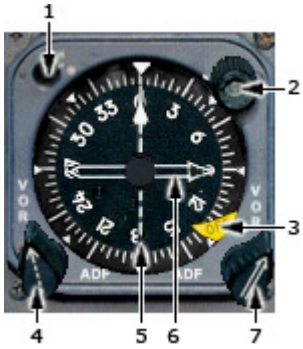
2. Airspeed Pointer

Displays indicated airspeed derived from pitot static pressures

4. Cursor Control

Positions cursor on scale to indicate reference airspeed selected.

L05. RADIO MAGNETIC INDICATOR (RMI)



1. Synchronizing Annunciators
2. Synchronizing Knob
3. Compass Warning Flag

4,7. ADF/VOR Selector Knob

5,6. ADF/VOR Pointers

A radio magnetic indicator (RMI) is provided on each pilot's panel to furnish the radio and magnetic bearing information required for navigation.

The components of each RMI consist of an azimuth card, a lubber line, two ADF/VOR pointers (No. 1 and No. 2), two ADF/VOR switches (No. 1 and No. 2), a synchronizing knob, a synchronizing annunciator and a compass warning flag.

The compass card rotates in a manner such that the heading of the airplane will always be read under a fixed reference index (lubber line) at the top of the instrument. Also, fixed indices are provided at 45°, 90°, 135°, 180°, 225°, 270° and 315°.

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The rotating compass card, or azimuth card, is graduated form 0 to 360 degrees clockwise in two degree increments.

The card is driven by a motor which receives signals from the directional gyro.

3. Compass Warning Flag

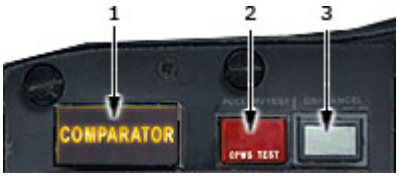
A compass warning flag on the lower right-hand corner of the RMI is marked OFF.
The warning flag will appear with loss of electrical power to the compass system, DG not levelling or underspeed, or excessive heading error signal.

5,6. ADF/VOR Pointers

Pointers indicate ADF and VOR bearing as selected by the ADF/VOR knobs at the bottom of the instrument.
A narrow pointer marked with a dashed line displays bearings from VOR No. 1 or ADF No. 1 as selected by the switch in the lower left corner of the instrument.

A wide pointer marked with two parallel solid lines displays bearings from VOR No. 2 (or ADF No. 2 if installed) as selected by the switch in the lower right corner.

L06. ANNUNCIATORS



1. Master Comparator Warning Light (Amber)
2. Pull Up Light/GPWS Test Switch (Red)
3. GC/Cancel Light

1. Master Comparator Warning Light (Amber)

An amber COMPARATOR light on each pilot's panel directs the pilot's attention to the annunciator on the center console.

2. Pull up Light/GPWS Test Switch (Red)

- Illuminates flashing to provide visual warning.
- Press to test aural and visual warnings. System cannot be tested between 50 and 1000 feet.

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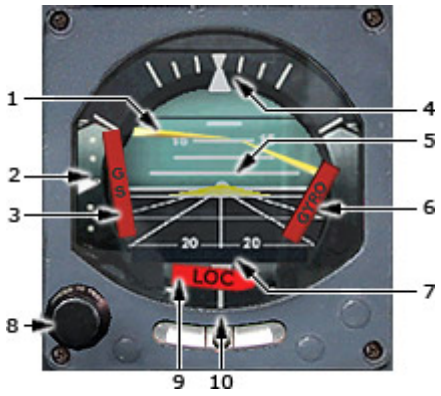
L07. ATTITUDE DIRECTOR INDICATOR (ADI)



1. Flight Director Bar
2. Glide Slope Pointer
3. Glide Slope Warning Flag
4. Bank Indicator
5. Symbolic Airplane
6. Gyro Warning Flag
7. Course Deviation Scale
8. Test Knob
9. Localizer Warning Flag
10. Slip Indicator

2. Glide Slope Pointer

In parallel with pointer on HSI.

OUT OF VIEW – Until localozer frequency selected and the GS signal malfunction.
IN VIEW
- GS receiver power off or fails
- GS receiver fails
- GS signal belowusable level

In parallel with pointer on HSI.

4. Bank Indicator

Airplane bank angle is displayed by an indicator read against a scale at the top of the instrument. The bank angle scale is marked at 10°, 20°, 30°, 45° and 60° left and right.

5. Symbolic Airplane

Fixed symbol of airplane. Attitude reference when related to horizon.

6. Gyro Warning Flag

IN VIEW
- Vertical gyro power is lost
- Giro in fast erection cycle
- Instrument amplifier power is lost

7. Course Deviation Scale

The course deviation scale, which is always perpendicular to the course bar, indicates the amount the airplane is displaced from the desired course.

Each dot on the scale represents 5° of displacement on VOR and 1 1/4° of displacement on a localizer.
The point at which the bar aligns with the course arrow indicates no displacement from the selected course.

9. LOC Warning Flag

Covers runway symbol, appears with navigation (LOC) warning flag on HSI for failure indication.

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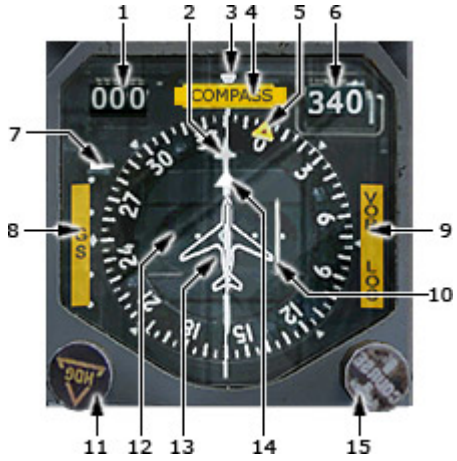
10. Slip Indicator

A slip indicator, located on the bottom of the flight director indicator, is provided to monitor slip or skid in turns.

L08. HORIZON SITUATION INDICATOR (HSI)



1. DME Indicator
2. Course Cursor
3. Compass Card and Lubber Line
4. Compass Heading (Warning) Flag
5. Heading Cursor
6. Course Counter
7. Glide Slope Pointer
8. Glide Slope Warning Flag
9. Navigation Warning Flag
10. Course Bar
11. Heading Selector
12. Course Deviation Scale
13. Symbolic Airplane
14. TO\FROM Indicator
15. Course Selector

1. DME Indicator

Indicates slant range in nautical miles to station tuned on corresponding VHF NAV radio.

2. Course Cursor

Indicates course correspond ing to digital readout on course counter. Rotates with card.

3. Compass Card and Lubber Line

Rotating card driven by compass system indicates airplane magnetic heading under lubber line.

4. Compass Heading (Warning) Flag

IN VIEW
- Compass system power fails
- Signal is unreliable
- Compass display is in error.

5. Heading Cursor

Indicates desired heading for flight director and/or autopilot operation

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6. Course Counter

One for each integrated flight system. Digital readout displays course as set by course selector.

7. Glide Slope Pointer

Indicates glide slope location relative to airplane position. In view when localizer frequency is selected. In parallel with glide slope pointer on ADI.

8. Glide Slope Warning Flag

IN VIEW over glide slope scale and pointer after localizer frequency is tuned when
- Glide slope power fails
- Signal is unreliable.
- In parallel with glide slope warning flag on ADI.

9. Navigation Warning Flag

IN VIEW
- VHF NAV radio power fails
- Signal is unreliable.

10. Course Bar

Movable center portion of course cursor represents segment of VOR radial or localizer beam. Relationship of bar to course deviation scale shows airplane position with respect to selected course.

11. Heading Selector

Rotation of selector adjusts heading cursor on Captain's and First Officer's HSI's. Selects heading for computed steering commands. Selected heading (Captain's HSU transmitted to autopilot and flight director.

12. Course Deviation Scale

Reference for measuring displacement from selected course (course bar). One dot deviation of course bar represents approximately 5 degrees on VOR and 1% degrees on localizer.

13. Symbolic Airplane

Represents airplane position relative to the selected course (course bar).

14. TO\FROM Indicator

Indicates direction of VOR station along selected course. OUT OF VIEW in localizer operation. Shown in TO position.

15. Course Selector

One for each integrated flight system. Rotation adjusts associated course counter, and course cursor to desired course for VOR or localizer navigation. Course selected for auto pilot on Captain's HSI.

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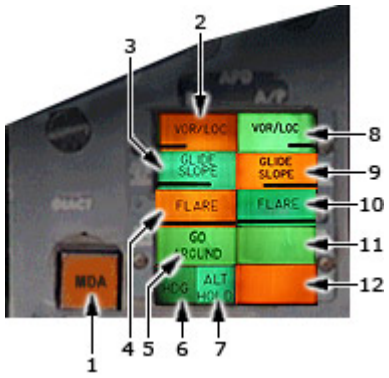
L09. ANNUNCIATORS



1. MDA light (amber)

Approach Progress Display

2,8. VOR/LOC Annunciator

3,9. Glide Slope Annunciator

6. HDG Annunciator

7. ALT Annunciator

1. MDA light (amber)

The MDA light illuminate when you pass the altitude you have set on the radio alt bug for the MDA (Minimum Descent Altitude) for the approach.

Approach Progress Display

Annunciators labeled ALT SEL, ALT, HDG, VOR/LOC and GLIDESLOPE are located on each pilot's forward instrument panel. ALT SEL, VOR/LOC and GLIDESLOPE may illuminate amber or green. ALT and HDG will only illuminate green.

2,8. VOR/LOC Annunciator

AMBER — System armed in NAV LOC or AUTO G/S modes prior to intercept of VOR radial or localizer beam.
GREEN - Radial or localizer captured.

3,9. Glide Slope Annunciator

AMBER - System armed in AUTO G/S prior to intercept of glide slope.
GREEN
- Glide slope captured.
- Green when MAN G/S selected.

6. HDG Annunciator

Paralleles green ENG annunciator of HDG SEL switch on autopilot control panel.
GREEN — Autopilot heading select is active.

7. ALT Annunciator

GREEN — Autopilot is operating in altitude hold.

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L10. STANDBY ALTIMETER

An absolute-pressure measuring altimeter is provided as a standby altimeter.
The indicator has a range of -1,000 to 50,000 feet, indicated by a drum and pointer.

1. Digital Display

2. 100-Foot Pointer

3. Barometric Setting Control

4,5. Altimeter Setting Windows

1. Digital Display

Shows altitude in increments of 100 ft.

2. 100-Foot Pointer

Displays attitude in 100 foot Increment (smallest division equals 20 feet). One full rotation of pointer equals 1000 feet.

3. Barometric Setting Control

Rotation of the control adjusts the barometric setting on the inches of mercury (in HG) indicator.

4,5. Altimeter Setting Windows

Can be set in millibars or inches/Hg.

L11. VERTICAL SPEED INDICATOR

1. Vertical Speed Pointer

Two vertical speed indicators are used on the airplane, one located on the Captain's panel and the other on the First Officer's instrument panel.

Each indicator operates from the airplane static pressure system and provides instantaneous display of airplane vertical speed in the range of 0 to 6,000 feet per minute, up or down.

These instruments differ from a conventional vertical speed instrument by the addition of two accelerometers which generate pressure differences whenever there is a change in the normal acceleration of the airplane.

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L12. PNEUMATIC BRAKE LEVER

1. Pneumatic Brake Lever

The lever has an OFF position and a range marked INCREASE.

In the OFF position, gas pressure is isolated from the transfer tube and the pneumatic brake line is vented to ambient pressure.

When the lever is in the INCREASE range, metered pneumatic pressure, depending on the position of the pneumatic brake lever, reaches the transfer tube and applies all main gear brakes simultaneously.

L13. HEIGHT INDICATOR

1. Decision Height Light
2. Altitude Alert Light.
3. Adjustable Altitude Trip Cursor
4. Pointer
5. Flag Display
6. Push-to-Test Button
7. Adjustable Altitude Trip

A low range radio altimeter is provided on each of the pilot's panels. The low range altimeter displays height above terrain with an altitude pointer moving over a circular scale. The range of the altimeter is from 0 feet to 2,500 feet.

A decision height (DH) selector is on one comer of the instrument and a decision height cursor is provided on the periphery of the altimeter. This cursor can be moved about the periphery of the altimeter with the DH selector, thus selecting the altitude at which a decision height light will illuminate.

A decision height light marked DH is on each pilot's panel and on each radio altimeter. These lights will illuminate when the altitude pointer on the associated low range radio altimeter reaches the DH cursor on that altimeter.

The low range altimeter warning flag is a cross-hatched flag which appears on the dial face. When the altimeter is operating properly, the flag is retracted.| The cross-hatched warning flag appears with power loss to the instrument, loss of a return radio signal, incorrect altitude tracking and operation above the altitude range of the equipment. The flag also appears when the low range radio altimeter test switch is actuated.

A test switch is installed on the altimeter. Operating the test switch will cause the altimeter to indicate 250 +-10 feet and the warning flag to appear.

On some aircraft, pressing the test switch causes the display to indicate 100 feet or 40 feet (as installed).

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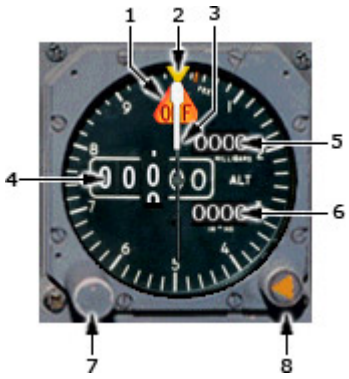
L14. ELECTRIC ALTIMETER

The pilot's altimeters are electrically operated. The Captain operates from the #1 air data computer and furnishes the air data computer with barometer corrections. These corrections are applied to the altitude signals sent from the air data computer to the altitude alerting system. The First Officer's altimeter operates from the air data sensor. This altimeter is the secondary altitude source for the ATC transponder.
On some aircraft, a servo /pneumatic altimeter on the Captain's panel is normally driven by the Air Data System and provides corrected altitude signals to the altitude alert system. The altimeter reverts to pneumatic operation in the event of power or air data failure. A pneumatic altimeter is provided on the F/O's panel which operates from the F/O's static system.

An altitude alerting system gives audible and visual indication of approaching an altitude (acquisition) or departing from an altitude (deviation). In the acquisition mode, an aural signal tone will sound momentarily and the alert lights will come on when passing through a point approximately 900 feet above or below the selected altitude. The light will remain on until approximately 300 feet from the selected altitude. In the deviation mode when departing the selected altitude the aural signal will sound momentarily and the alert lights will come on at approximately 300 feet above or below the selected altitude. The alert light will remain on until reset by pressing the alert light. A failure flag will appear in the alert indicator if a failure occurs in the Captain's altimeter or the alert indicator.

The altitude alerting system may be tested by turning the altitude selector toward the airplane altitude and then up through more than 900 feet above the airplane altitude. The aural signal sounds momentarily and the alert light illuminates when the indicator reads 300 feet from the airplane altitude and remains extinguished until 300 feet from the airplane altitude. When indicator altitude exceeds airplane altitude by 300 feet, the aural signal sounds momentarily and the alert lights illuminate.



1. Failure Warning Flag
2. Reference Altitude Bug
3. 100 Foot Pointer
4. Altitude Numerical Counter

5,6. Altimeter Setting Windows

7. Barometric Setting Control
8. Reference Altitude Bug Selector

2. 100 Foot Pointer

Displays altitude in 100 foot increments. One full rotation of pointer equals 1000 feet.

3. Altitude Numerical Counter

Displays altitude in thousands and hundreds of feet.

4. Failure Warning Flag

In view indicating loss of signals, power or altitude error.

5,6. Altimeter Setting Windows

Can be set in Millibars or inches/Hg.

7. Barometric Setting Control

Rotation of the control adjusts the barometric setting on the inches of mercury (in hg) indicator.

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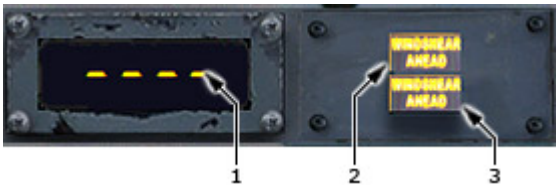
8. Reference Altitude Bug Selector

Turn clockwise for higher reference altitude.

L15. DME INDICATOR AND WINDSHEAR AHEAD LIGHTS



1. DME indicator

2,3. Windshear Ahead Lights (Amber)

1. DME indicator

Provides slant range in nautical miles to station tuned.

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DO NOT USE FOR FLIGHT

CENTER FORWARD PANEL

C01. Lights Test/Marker
C02. Altitude Alerting Panel
C03. Marker Lights
C04. Standby Artificial Horizon
C05. Annunciators
C06. Controls / Trimmer Position Indicators
C07. Engine Instrument Panel
C08. Flaps Indicators /Master Warning
C09. Low Oil Pressure/Oil Filter Bypass Caution Lights
C10. Landing Gear Control Panel

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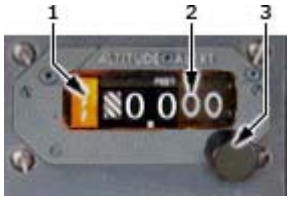
DO NOT USE FOR FLIGHT

C01. LIGHTS TEST/MARKER

1. Marker Beacon Sensitivity Switch
2. Master Test and Dimming Switch

C02. ALTITUDE ALERTING PANEL



1. Altitude Alert System OFF Flag
2. Altitude Set Indicator
3. Altitude Set Control

2. Altitude Set Indicator

Indicated selected altitude in 100-foot increments.

3. Altitude Set Control

Used to set selected altitude in altitude indicator.

An altitude alerting system gives audible and visual indication of approaching an altitude (acquisition) or departing from an altitude (deviation). In the acquisition mode an aural signal tone will sound momentarily and the alert lights will come on when passing through a point approximately 900 feet above or below the selected altitude. The light will remain on until approximately 300 feet from the selected altitude. In the deviation mode when departing the selected altitude the aural signal will sound momentarily and the alert lights will come on when passing through a point approximately 300 feet above or below the selected altitude. The alert light will remain on until reset by pressing the alert light.

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C03. MARKER LIGHTS

1. Airways Light (Clear)
2. Middle Marker Light (Amber)
3. Outer Marker Light (Blue)

1. Airways Light (Clear)

Illuminates steady when over airways beacon or flashing when over airway fan marker beacon (3000 Hz signal)

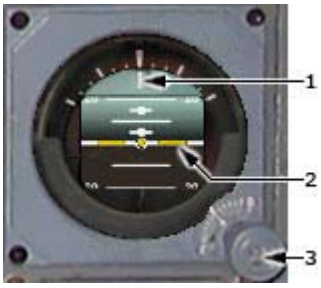
2. Middle Marker Light (Amber)

Illuminates flashing when over ILS middle marker beacon (1300 Hz signal)

3. Outer Marker Light (Blue)

Illuminates flashing when over ILS outer marker beacon (400 Hz signal)

C04. STANDBY ARTIFICIAL HORIZON



1. Bank Indicator
2. Symbolic Airplane
3. Pitch Trim and Gyro Caging Control

1. Bank Indicator

Indicates airplane bank angle in degrees

2. Symbolic Airplane

Reference bars provide attitude reference.

3. Pitch Trim and Gyro Caging Control

CONTROL IN - Rotate to adjust airplane symbol

CONTROL OUT - (Momentary) - Erects horizon

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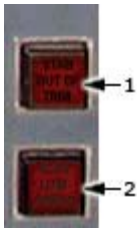
C05. ANNUNCIATORS



1. Stabilizer Out of Trim Light

2. Elevator Low Pressure Annunciators

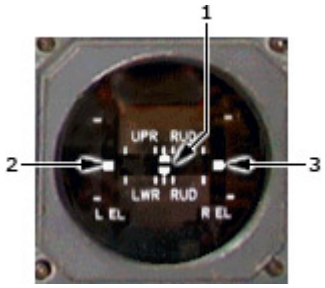
1. Stabilizer Out of Trim Light

A light on the center panel will illuminate when autopilot inputs to the elevator are not trimmed out by the stabilizer.

2. Elevator Low Pressure Annunciator

Illuminates when system A or B hydraulic pressure to the elevator power unit is low, or the system A or system B elevator switch is in the OFF position.

C06. CONTROLS POSITION INDICATORS



1, 2, 3. Controls Position Indicator

Show positions of left (2) and right (3) elevators and upper and lower (1) rudders when airplane power is on the bus.

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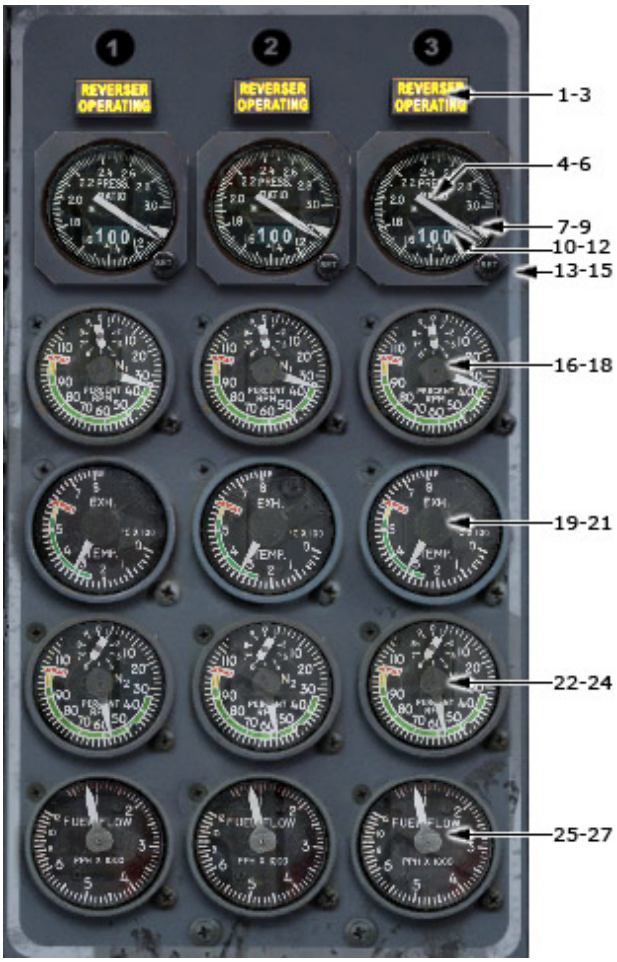
C07. ENGINE INSTRUMENT PANEL



1,2,3. Thrust Reverser Operating Lights

4-6. Engine Pressure Ratio Setting Pointer

7-9. Engine Pressure Ratio Bug

10-12. Engine Pressure Ratio Setting Display

13-15. EPR Bug Setting Knob

16-18. N1 Tachometers

19-21. Engine Exhaust Gas Temperature Indicators

22-24. N2 Tachometers

25-27. Engine Fuel Flow Indicators

1,2,3. Thrust Reverser Operating Lights

Three amber thrust reverser operating lights marked REVERSER OPERATING. This light illuminates to indicate that the reverse thrust unit is not locked in the cruise forward thrust position. This light may be dimmed if required.

Engine Pressure Ratio Indicators

An indication of engine thrust output is shown by three engine pressure ratio indicators on the pilot's center panel. Engine pressure ratio is defined as the ratio of the turbine discharge total pressure to the engine inlet total pressure (Pt7/Pt2) and is a parameter of the thrust developed by the engine.

The indicator is used as a primary thrust setting instrument since EPR is directly proportional to thrust. Most EPR gauges require normal AC from their respective busses.

13-15. Engine Pressure Ratio Setting Knob

A setting knob enables the pilot to set the reference index and the digital indicator to the preselected EPR value when the knob is pulled out to the manual position.

The EPR set reference index is automatically set by the PDCS unit when the EPR set knob is pushed into the automatic position.

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16-18. N1 Tachometers

Indicate RPM of the low pressure compressor. Small dial is graduated in 1% increments marked from 0-9.1 Large dial is graduated in 2% increments marked every 10% from 0-100. Tachometer systems are self-generating.

19-21. Engine Exhaust Gas Temperature Indicators

Three engine exhaust gas temperature indicators, calibrated in degrees centigrade, indicate temperature of the exhaust gases of each engine in the turbine exhaust case. On most aircraft these indicators are self powered. On other aircraft the EGT indicators are of an improved response type and utilize the 115 volt AC standby bus as a power source.

22-24. N2 Tachometers

Indicate RPM of the high pressure compressor. Small dial is graduated in 1% increments marked from 0-9. Large dial is graduated 2% increments marked every 10% from 0-100. Tachometer systems are self-generating.

25-27. Engine Fuel Flow Indicators

The engine fuel flow indicators provide a visual indication of the fuel consumption rate for each engine. Power for these indicators is from the 115V AC2 and from the 28V DC2 bus. The indicators are very accurate up to 6000 pph, with normal fuel flow rate during engine starts of approximately 1000 pph, and 3200 during cruise.

C08. FLAPS INDICATORS /MASTER WARNING

1. Master Warning Light (Flashing Red)

2,5. Flap Position Indicators

3,4. Leading Edge Flap Lights

1. Master Warning Light (Flashing Red)

On - when essential ac bus not energized.

Push - extinguishes light on center panel. Will not extinguish power failure warning light on third Crewman's upper panel.

2,5. Flap Position Indicators

Two dual flap position indicators on the pilots' center panel are marked OUTBD and INBD respectively.

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Two needles in each indicator marked L and R indicate corresponding flap positions. White bands indicate maximum allowable needle deviation at each flap position.

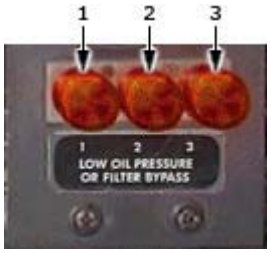
3,4. Leading Edge Flap Lights

AMBER ILLUMINATED
- Any leading edge device in transit.
- At flap lever position 2, leading edge devices 2, 3, 6 or 7 not extended.

GREEN ILLUMINATED
- At flap lever position 2, slats 2 & 3. 6 & 7 fully extended.
- At any other flap lever position, all leading edge Haps and slats fully extended.

No Lights -
All leading edge flaps and slats retracted.

C09. LOW OIL PRESSURE/OIL FILTER BYPASS CAUTION LIGHT



Low Oil Pressure/Oil Filter Bypass Caution Lights

Three (amber) lights labeled LOW OIL PRESSURE or FILTER BYPASS are on the pilot's center panel. These lights provide an indication at the pilot's station to supplement the oil pressure indicators at the S/O's panel. Normally the light should extinguish during engine start.

When this light is illuminated and oil pressure indication normal, a clogging main oil filter should be suspected. The incident should be reported as an engine discrepancy.

This light illuminates at 35 ± 1 PSI when pressure is decreasing and goes out at 36.5±1 PSI when pressure is increasing.

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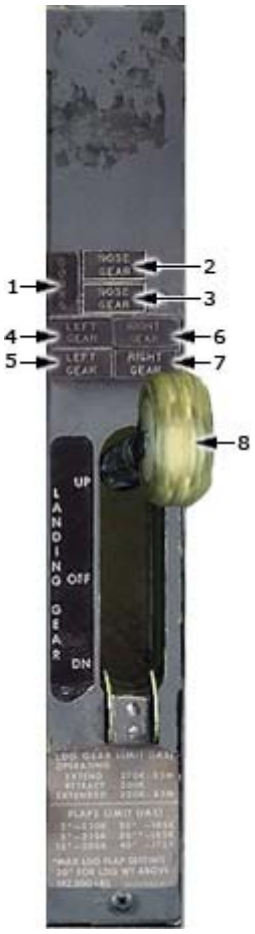
C10. LANDING GEAR CONTROL PANEL



1-7. Landing Gear Lights

8. Landing Gear Lever

1-7. Landing Gear Lights

Three red lights marked L GEAR, N GEAR and R GEAR will illuminate when the corresponding gear is not locked in the position, as selected by the landing gear lever, or when any engine thrust lever is retarded with the landing gear.

Three green lights marked L GEAR, N GEAR and R GEAR illuminate when the corresponding gear is down and locked.

A red warning light will illuminate when any of the main gear doors or forward nose gear doors are not up and locked.

8. Landing Gear Lever

The landing gear lever is on the pilot's center panel and has UP-OFF-DN positions.

A placard below the lever indicates limit speeds for landing gear extending, retracting and extended.
The landing gear lever operates the hydraulic landing gear selector valve through a control cable arrangement.

In the UP position, the landing gear lever in addition to retracting the landing gear, also causes retraction of the tailskid and automatically applies all wheel brakes.

The tailskid will extend when the landing gear lever is in the DN (down) position.

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RIGHT FORWARD PANEL

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R01. Airspeed/Machmeter Indicator
R02, 06, 09. Annunciators
R03. Autopilot Disengaged Warning Light
R04. Mach Airspeed Indicator
R05. Radio Magnetic Indicator (RMI)
R07. Attitude Director Indicator (ADI)
R08. Horizontal Situation Indicator (HSI)
R10. Standby Altimeter
R11. Vertical Speed Indicator
R12. Brake Pressure Indicators
R13. Radio Altimeter
R14. Marker Lights
R15. DME/ Windshear

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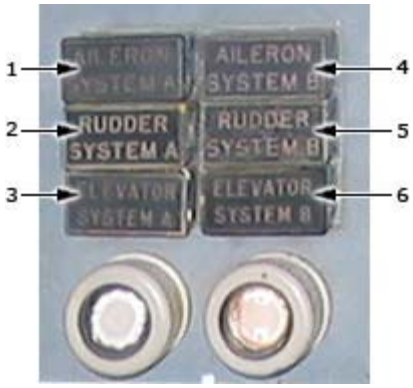
R02. LOW PRESSURE ANNUNCIATORS



1,2. Aileron Low Pressure Annunciators

2,5. Rudder Low Pressure Annunciators

3,6. Elevator Low Pressure Annunciators

1,2. Aileron Low Pressure Annunciators

Two amber annunciators on the First Officer's panel will read AILERON SYSTEM A and AILERON SYSTEM B, when illuminated.

When system A or B hydraulic pressure to the aileron power unit is low, or the system A or B aileron switch is in the OFF position, the aileron system A or B low pressure annunciator will illuminate.

2,5. Rudder Low Pressure Annunciators

Two amber annunciators on the First Officer's panel are marked RUDDER SYSTEM A and RUDDER SYSTEM B.

The annunciator marked RUDDER SYSTEM B will illuminate when hydraulic system B power to the upper rudder is low or switched off, rendering the upper rudder inoperative.

The annunciator marked RUDDER SYSTEM A will illuminate when hydraulic system A power to the lower rudder is low or switched off.

3,6. Elevator Low Pressure Annunciators

Two amber annunciators on the First Officer's panel display ELEVATOR SYSTEM A and ELEVATOR SYSTEM B when illuminated.

When system A or B hydraulic pressure to the elevator power unit is low, or the system A or system B elevator switch is in the OFF position, the corresponding elevator low pressure annunciator will illuminate.

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R12. BRAKE PRESSURE INDICATORS

1. Pneumatic Brake Pressure Indicator
2. Hydraulic Brake Pressure Indicator

1. Pneumatic Brake Pressure Indicator

Normal reading is 1200 PSI nominal.

2. Hydraulic Brake Pressure Indicator

This indicator indicates pressure on the air side of the brake accumulator. The indicator will display precharge pressure when the brake hydraulic system is depressurized and will display zero, if the precharge pressure is lost.

When the brake system hydraulic pressure exceeds precharge pressure, the indicator will display brake system hydraulic pressure.

Normal Precharge - 1000 PSI.
Normal Pressure - 3000 PSI.
Maximum Pressure - 3500 PSI.

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GLARESHIELD PANEL

1. Engine Failure Light
2. Wheel Well Fire Warning Light
3,9. Freon Bottle Discharge Light
4,7,10. Fire Handles
5,8,11. Bottle Discharge Switches
6. Bottle Transfer (Selector) Switch
12. Fire Test Switch
13. Switch Guard
14. Fire Alarm Bell Cutout Switch
15. Detector Test Button

2. Wheel Well Fire Warning Light

A red fire warning light marked WHEEL WELL on the fire control panel will illuminate and the fire alarm bell will sound continuously when a fire or overheat condition exists in either main wheel. The same light and bell will also be energized if an overheat condition in the nose wheel well exists.

When the temperature in the area drops below the alarm level, the light and bell will be de-energized. The bell may also be de-energized immediately, following a fire or overheat signal by operating the fire alarm bell cutout switch, remote control APU fire warning horn cutout switch or APU fire warning TEST-RESET switch.

3,9. Freon Bottle Discharge Light

The light will illuminate when the pressure in the respective bottle falls below a pre-determined value, due to discharge.

4,7,10. Fire Handles

Three engine fire handles (incorporating fire warning lights) marked "1", "2" & "3" are on the fire panel. Engine fire extinguishing is accomplished by pulling the affected fire handle and depressing the bottle discharge switch for at least one second.

With the fire handle pulled, the following actions occur:

1. The extinguisher bottle (discharge squib) and the engine fire extinguisher selector valve are armed.
2. The engine fuel shutoff valve will close.
3. The respective wing anti-ice valves (engine #1 or #3), #2 engine cowl valve and the air conditioning bleed valve will close.
4. The generator field control relay will trip after 5 to 10 seconds time delay. To allow closure of elect powered valves of associated engine.
5. The hydraulic fluid supply shutoff valve of engine #1 or engine #2 will close.
6. The hydraulic low pressure light circuit for engine #1 or engine #2 are deactivated.

With the engine fire handle pulled out, and the bottle discharge switch depressed, the actual fire extinguishing process will commence.

5,8,11. Bottle Discharge Switches

A push button type bottle discharge switch is located under each engine fire handle. When a selector handle is pulled out, depressing the respective discharge switch will fire the cartridge in the selected freon bottle valve to release freon and open the respective engine selector valve to permit freon to enter the engine compartment.

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6. Bottle Transfer (Selector) Switch

This switch, marked BOTTLE TRANSFER, is on the fire control panel. The switch controls the routing of the freon extinguishing agent from the two freon bottles (RH and LH). If it is necessary to discharge the second freon bottle, this switch must be selected to the opposite position, in which case a new circuit breaker power source is also selected.

The RH and LH switch positions are associated with the respective RH and LH bottle discharge lights to provide for positive selection of a second freon bottle.

12. Fire Test Switch

A test switch marked FIRE TEST with FIRE WALLS-ENGS & WHEEL WELLS positions, on the fire control panel, is provided to test the fire warning system.

A. With the switch in the FIREWALL position, the engine fire warning lights will illuminate and tine fire alarm bell will ring, normally within 60 seconds. After releasing the test switch, the lights should extinguish within 15 seconds.
B. With the switch in the ENGS & WHEEL WELLS position, the bell will ring and the wheel well fire warning light will illuminate immediately. Normally within 60 seconds all engine fire warning lights will illuminate.

The fire test switch must be released immediately when all three engine fire warning lights illuminate. The time delay between the illumination of the wheel wells fire warning light and the 4 engine fire warning lights is determined by the time necessary to heat the sensor/responder to the warning temperature.

Caution:

When testing the engine or engine firewall fire detection system, minimize duration of fire test switch operation. The test should be stopped when all engine fire warning lights illuminate. Test time should not exceed 60 seconds per each test position. On some aircraft, the response is immediate when tested.

A fault in the system will be indicated by illumination of the amber fault light on the S/O auxiliary panel. A fault on the B side of the system will be indicated at any time. A fault on the A side is only indicated immediately after a test of the system.

14. Fire Alarm Bell Cutout Switch

Will silence the bell and horn and will change the flashing red light on the APU remote control panel to a steady light. The lights will remain illuminated as long as the fire condition exists.

15. Detector Test Button

When pressed, performs a continuity test of the firewall, engine, and the wheel wall fire detectors, and the detector circuit ground lights.

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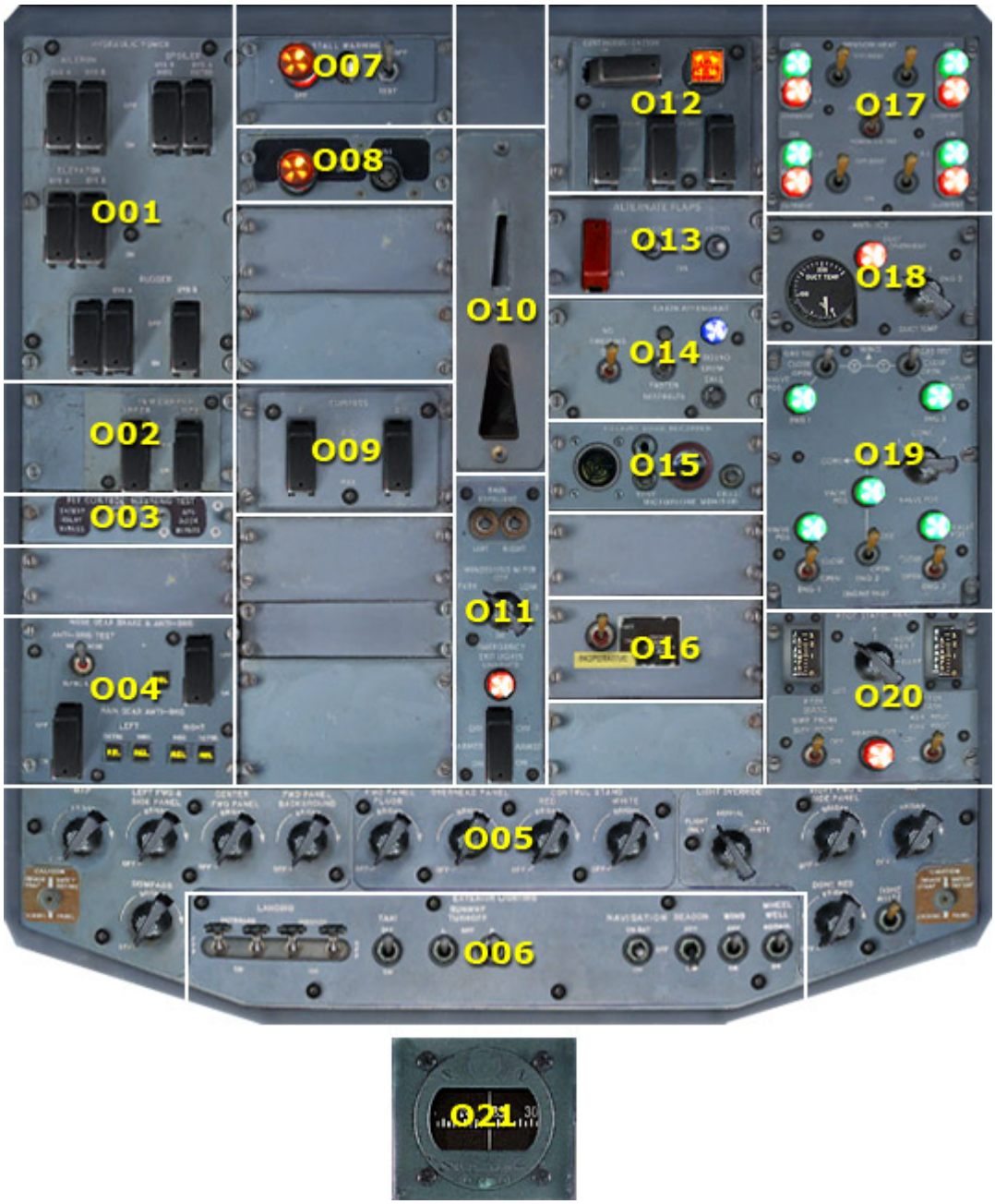
OVERHEAD PANEL



O01. Hydraulic Power System
O02. Yaw Damper Switches
O03. Flight Control Warning Test Switch
O04. Anti-Skid Control Panel
O05. Interior Lighting Panel
O06. Exterior Lighting Panel
O07. Stall Warning System
O08. Flight Recorder
O09. Compass Mode Panel
O10. Flood Light
O11. Windshield Wipers And Rain Repellent Panel
O12. Engine Start Panel
O13. Alternate Flaps Panel
O14. Cabin Call Panel
O15. Voice (Tape) Recorder Unit
O17. Window Heat Panel
O18. Anti-Ice Panel
O19. Wing, Engine and Cowl Anti-Icing Panel
O20. Pitot Static Heat Panel
O21. Standby Magnetic Compass

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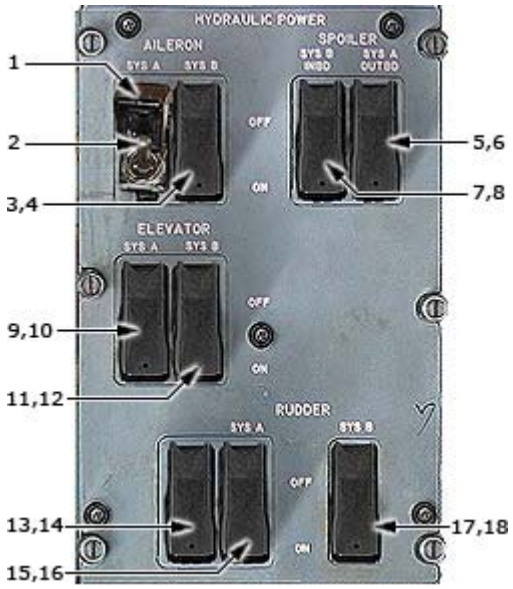
O01. HYDRAULIC POWER SYSTEM



1,3,5,7,9,11,13,15,17. Switch Guard

2,4,10,12. Flight Control Hydraulic Shutoff Switches

6. Spoiler Switch (System A)

8. Spoiler Switch (System B)

14,16. Lower Rudder Switches (Standby and System A)

18. Upper Rudder Switch (System B)

2,4,10,12. Flight Control Hydraulic Shutoff Switches

Shuts off respective hydraulic system pressure to designated flight controls.

6. Spoiler Switch (System A)

OFF - Shuts off system A hydraulic pressure to outboard flight spoilers.

8. Spoiler Switch (System B)

OFF - Shuts off system B hydraulic pressure to inboard flight spoilers.

Two switches on the overheat panel are marked SPOILER, SYS в INBD and SYS A OUTBD. The switches have ON-OFF positions and are guarded in the ON position. Each switch controls a motor operated hydraulic shutoff valve.

When a spoiler switch is in the OFF position, hydraulic supply to the corresponding spoilers is shut off. Hydraulic locks will prevent upward movement of the flight spoilers when normal hydraulic pressure is not available.

14,16. Lower Rudder Switches (Standby and System A)

Switches and guards ganged together.

Guards up, switches up – shuts off System A hydraulic pressure to lower rudder. Turns on Standby System Pump.

Two ganged switches on the overhead panel are marked RUDDER SYS A and STANDBY. The switches have ON—OFF positions.

When the switches are guarded, the system A rudder switch is on and the standby rudder switch is off. In this position, the standby rudder power unit is functioning as a gust damper.

When the system A rudder switch is in the OFF position, the standby rudder switch is ON and the standby hydraulic system is operating. A hydraulic transfer valve will engage the standby power unit hydraulically to operate the lower rudder.

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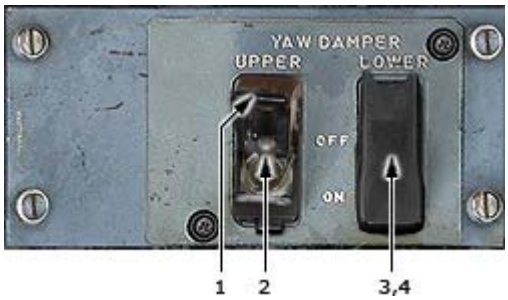
18. Upper Rudder Switch (System B)

OFF – shuts off system B hydraulic pressure to upper rudder

The system B rudder switch on the overhead panel is marked RUDDER SYS B. The switch has ON-OFF positions and is guarded to the ON position.

When the switch is in the OFF position, the upper rudder hydraulic supply shutoff valve is closed, which deactivated the rudder.

O02. YAW DAMPER SWITCHES



1,3. Switch Guard

2,4. Yaw Damper Engage Switches

2,4. Yaw Damper Engage Switches

Two switches on the overhead panel, each with ON-OFF positions, one marked UPPER and the other LOWER, are used to control the yaw dampers.

O03. FLIGHT CONTROL WARNING TEST SWITCH

1. Flight Control Warning Test Switch

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O04. ANTI-SKID CONTROL PANEL

1. Anti-Skid Test Switch

2. Nose Gear Brake Released Indicator

3. Nose Gear Brake and Anti-Skid Switch

4,6. Switch Guard

5. Main Gear Anti-Skid Switch

7-10. Brake Released Indicator

The anti-skid system prevents wheel skidding by controlling applied brake pressure.
Maximum braking efficiency is obtained when all wheels are in a slight skid or at a maximum rate of deceleration short of a skidding wheel.

An electronically controlled anti-skid control valve for each main wheel continuously varies individual brake pressure in response to wheel action.

Maximum braking is produced under any variety of runway condition.

The anti-skid system consists of individual wheel speed sensors, an antiskid control shield and two dual anti-skid control valves. The system also includes a test circuit and indicators which allow the system to be checked for proper operation in flight or on the ground.

1. Anti-Skid Test Switch

This switch on the overhead panel marked ANTI-SKID TEST can be used to test the anti-skid system with or without the parking brake on. The switch has momentary INBD & NOSE and OUTBD & NOSE positions, and is spring loaded to the neutral position.

INBOARD & NOSE
Inb and nose indicators – blank.
Outboard indicators – rel.

OUTBOARD & NOSE
Outb & nose indicators blank
Inboard indicators – rel.

An AC signal, similar to the signal generated by a rotating wheel can be introduced by the test switch into the anti-skid control module. When the wheels are not rotating and the anti-skid system is armed, this simulated rotation of the wheels selected by the anti-skid test switch will make brakes available on those wheels. The corresponding brake released indicators will show blanks.

The remaining wheels, not selected by the test switch position will give a wheel not rotating signal to the control module. The control module interprets this signal as a locked wheel signal as compared to the simulated wheel rotating signal and gives a full strength release signal to those wheel brakes. The corresponding indicators will display REL.

In either test position, the anti-skid return valves will open. Hydraulic fluid will bleed to return, if the brakes are actuated, or the parking brake is on during anti-skid test.

A line connects the system A reservoir at the 2.5 gallon level with the tope of the system B reservoir to provide system B with pressurization, make up fluid and thermal expansion.

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3. Nose Gear Brake and Anti-Skid Switch

System deactivated.

5. Main Gear Anti-Skid Switch

Turns off anti-skid system. System active only when landing gear lever is down or the nose gear is not locked up and parking brake is off.

This switch on the overhead panel is marked MAIN GEAR ANTI-SKID and has ON-OFF positions. The switch is guarded in the ON position.

The main wheel anti-skid protection is deactivated when the switch is in the OFF position.

The main wheel brakes are normally available with this switch in either the ON or the OFF position.

7-10. Brake Released Indicator

In air (gear up) - all blank (system deactivated)
In air (gear down) - all rel
On ground (above 15 kts) – blank.
On ground (below 15 kts) - nose rel, remainder blank
Parking brake on - all blank (system deactivated)

Four brake released indicators are adjacent to the main gear anti-skid switch on the overhead panel. Two of the indicators are marked LEFT, OUTBD and INBD. The other two are marked RIGHT, INBD and OUTBD. These indicators normally show blanks.

When a brake is released by the anti-skid system, the corresponding indicator will display REL.

During anti-skid system test, the brake released indicators of the brakes selected by the anti-skid test switch position will show blanks and the remaining brake released indicators will show REL.

O05. INTERIOR LIGHTING PANEL

1,11. Map Lights Switch
2. Left FWD & Side Panel Lights
3. Center FWD Panel Lights
4. FWD Panel Background Lights
5. FWD Panel Fluor Lights
6. Overhead Panel Lights
7. Control Stand Red Lights
8. Control Stand White Lights
9. Light Override Switch
10. Right Fwd & Side Panel Lights
12. Compass Light
13. Dome Red
14. Dome White

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2. Left FWD & Side Panel Lights

Control integral Instrument illumination on left forward and tide panels. Alto controls panel light for first and second observers.

3. Center FWD Panel Lights

Control integral instrument illumination on center panel.

4. FWD Panel Background Lights

Control lights located under the light shield.

5. FWD Panel Fluor Lights

Control white fluorescent lights under light shield.

6. Overhead Panel Lights

Control integral instrument Illumination on overhead panel.

7. Control Stand Red Lights

Control red flood lights located in overhead panel for illuminating the control stand.

8. Control Stand White Lights

Control white floodlight» located in overhead panel for illuminating the control stand.

10. Right Fwd & Side Panel Lights

Control integral instrument illumination on the right forward and side panels.

12. Compass Light

Controls light in standby compass.

13. Dome Red

Three pairs of red and white dome lights provide general diffused illumination of the control cabin.
Two pairs of lights are installed on the left and right supports of the overhead panel, and the other pair in the center of the aft control cabin area.
The variable intensity control for the red lights is by a switch marked DOME RED, on the overhead panel.

14. Dome White

The control for the three white dome lights is by two switches; a switch to the right of the control cabin door and the other by a switch marked DOME WHITE on the overhead panel. When external AC power is applied to the airplane, and the external power switch on the S/O upper panel is in the GRD SERVICE position, power is available to the white dome lights.

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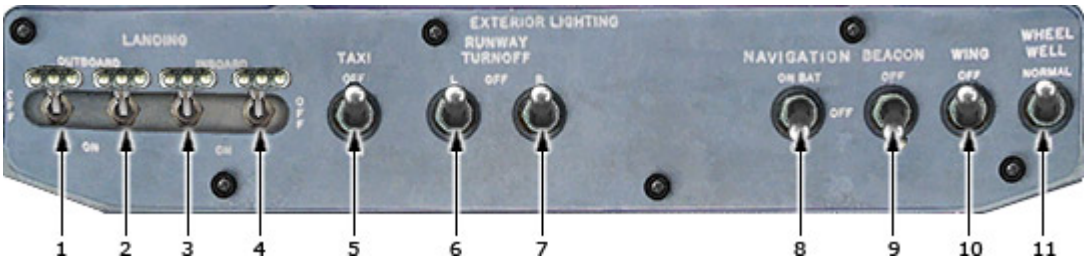
O06. EXTERIOR LIGHTING PANEL



1-4. Landing Lights Switch
5. Taxi Light Switch
6,7. Runway Turnoff Lights Switch
8. Navigation Lights Switch
9. Beacon (Anti-Collision) Lights
10. Wing Illumination Lights
11. Main Wheel Well Lights Switch

1-4. Landing Lights Switch

Landing lights in the fixed inboard wring L.E. and another in each outboard Krueger flap, provides high intensity lighting for takeoff and landing. Illumination of these lights is controlled by four switches on the lower edge of the overhead panel marked LANDING, INBOARD L and R and LANDING, OUTBOARD L and R

5. Taxi Light Switch

A taxi light is mounted on the nose wheel strut. The light is controlled by a switch on the lower edge of the overhead panel marked TAXI with ON--OFF positions,

6,7. Runway Turnoff Lights Switch

A RUNWAY TURNOFF light is adjacent to and inboard of, the inboard fixed landing light.

The lights provide ground roll illumination and are controlled by two switches on the lower edge of the overhead panel marked RUNWAY TURNOFF L and R with ON--OFF positions.

Note:

Do not illuminate LANDING and/or RUNWAY TURNOFF lights for more than 5 minutes while stationary on the ground. Allow a 5 minute cooling period before re-illuminating.

8. Navigation Lights Switch

White tip mounted tail lights are installed on the trailing edges of the wing tips to provide a horizontal white beam aft. These lights are controlled by the navigation light switch, on the overhead panel, marked NAVIGATION with ON-OFF--ON BAT positions.

Navigation lights, red left and green right, are provided in the outboard edge of each wing.
The lights are controlled by a switch marked NAVIGATION with ON--OFF--ON BAT positions on the overhead panel.

In the ON position the lights are powered by 28V AC, and in the ON BAT position by 28V DC.
On some aircraft, the ON position of the nav light switch activates the oscillating position lights. The stationary position lights are on whenever the aircraft is powered.

Note:

The ON position will be used for all flight operations. The ON BAT position induces unacceptable compass error and therefore will only be used for maintenance ground towing.

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9. Beacon (Anti-Collision) Lights

The beacon lights on the top and bottom of the fuselage, provide high intensity red flashes, as a proximity warning of the aircraft. Each beacon light consists of two partly silvered lamps covered with a red glass lens. The lights are controlled by a switch marked Brc\coN, with ON--OFF positions, on the overhead panel.

10. Wing Illumination Lights

Two wing illumination lights are mounted flush with the fuselage and forward of the wing leading edge.
The lights are controlled by a switch on the lower edge of the overhead panel marked WING with ON-OFF positions.

11. Main Wheel Well Lights Switch

Each main wheel well is illuminated by two clear lights, one on the forward bulkhead and one on the keel beam near the ceiling. The lights can be controlled by a switch marked WHEEL WELL with NORMAL--ON positions on the overhead panel.

With the switch in the NORMAL position the wheel well lights are controlled by the switch in each respective wheel well. When the switch is in the ON position the wheel well lights will be on regardless of the switch position in the wheel wells.

O07. STALL WARNING SYSTEM

1. Stall Warning Power Failure Light
3. Stall Warning Test Switch
2. Test Indicator

The stall warning system provides a means of alerting the pilots of a flight condition approaching a stall. When the system is armed and a near stall attitude is sensed, a shaking device on the Captain's control column makes the control column shake.

The stall warning system components are as follows: an angle of airflow sensor, a flap position transmitter, a stall warning computer, a control column shaker motor and a landing gear safety (oleo "squat") switch circuit. An internal heater is provided for the angle of airflow sensor unit for the vane anti-icing.
The landing gear safety (oleo "squat") switch circuit is used for arming the stall warning system. The stall warning system airflow sensor is anti-iced continuously any time airplane power is on. With external or APU power connected, the anti-icing system is not operating except when the system is checked momentarily by the means of the test switch.

The airflow sensor generates an electrical signal in relation to the airplane stall condition. This signal is compared with the flap position in the stall warning computer. Whenever the angle of airflow sensor signal exceeds the flap position signal, the computer applies 28V DC power to the control column shaker motor.

1. Stall Warning Power Failure Light

This amber light marked STALL WARNING OFF is on the overhead panel adjacent to the stall warning test switch. It will illuminate to serve as a warning, any time there is a failure of 115V AC and/or 28V DC power and/or to indicate vane heater malfunction.

The light will be on also at all times when the airplane is on the ground and external or APU power is on, providing the stall warning test switch is not in the TEST position.
Power for the light is supplied from the 28V DC battery bus.

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2. Test Indicator

Rotates during test to indicate reliable inputs from stall warning senior and flap position transmitter.

3. Stall Warning Test Switch

Spring loaded to the NORMAL position and locked from the MTR OFF position. Pulling the switch will bypas the lock.
HTR OFF - Cuts power to the heater for maintenance purposes.
NORMAL - The system including the vane heater is powered when the airplane landing gear safety sensor is in the air position.
TEST
- With APU or external power:
    1. OFF - light extinguishes.
    2. Indicator spins
    3. Control columns shake.
- With airplane power:
    1. OFF light remains extinguished,
    2. Indicator spins.
    3. Control columns shake.

This switch marked STALL WARNING TEST on the overhead panel, enables pilots to test the system integrity. When the switch is momentarily held in the TEST position, a signal is sent into the stall warning computer and makes the pilot's control column shake; at the same time if the system is operating on external or APU power, the stall warning power failure light will go off, thus indicating proper operation of the vane heater. Additionally, a spinner will rotate to indicate the flap-to-computer circuitry is intact. When the switch is momentarily held in the TEST position, a signal is sent into the stall warning computer and makes the pilot's control column shake; at the same time if the system is operating on external or APU power, the stall warning power failure light will go off, thus indicating proper operation of the vane heater. Additionally, a spinner will rotate to indicate the flap-to-computer circuitry is intact.

O08. FLIGHT RECORDER

1. Flight Recorder Light

2. Flight Recorder Test Switch

The purpose of the flight recorder is to provide continuous recording of airspeed, acceleration, altitude, time and heading. It also receives data from which the time of each radio transmission from aircraft to ground station can be determined. The recorder is operating any time electrical power is being supplied by the ship's generators. An underwater beacon is installed to assist in locating the flight recorder under water.

1. Flight Recorder Light

An amber colored light marked OFF is on the overhead panel. When illuminated, the light indicates power failure to the recorder or that the recording tape is broken.

Extinguished - recorder it operating either automatically or during test.

2. Flight Recorder Test Switch

With this switch, marked TEST, on the overhead panel, actuated, the flight recorder can be operated on external or APU power as evidenced by an extinguished flight recorder light while the test switch is closed.

If the flight recorder light does not illuminate after the flight recorder test switch has been depressed, it indicates that the flight recorder tape is satisfactory.

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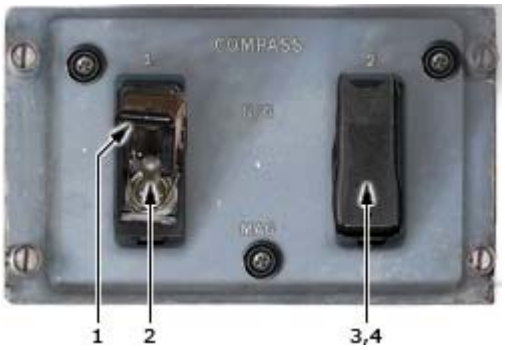
O09. COMPASS MODE PANEL



1,3. Switch Guard

2,4. Compass System Switch

O10. FLOOD LIGHT

Flood Light

1. Red
2. White

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O11. WINDSHIELD WIPERS AND RAIN REPELLENT PANEL

1,2. Rain Repellent Switches

3. Windshield Wipers Switch

4. Emergency Exit Lights Unarmed Light

5. Switch Guard

6. Emergency Exit Lights Switch

1,2. Rain Repellent Switches

A rain repellent system is provided to be used in conjunction with the windshield wiper system to improve visibility during heavy rain. When actuated, the system sprays a predetermined amount of repellent solution on the Captain's or First Officer's No. 1 window, as selected.

The solution is spread on the windows by rain water flowing over the solution and action of the wiper blades. This provides the windows with a water repellent coating.

Two push button type switches marked RAIN REPELLENT, LEFT, RIGHT are on the overhead panel. Each switch actuates a solenoid valve, controlled by a time delay circuit, which controls the flow of repellent fluid to the spray nozzles at the base of each windshield wiper.

The switch must be depressed momentarily for the full measured flow of repellent fluid to be applied. The switch then must be released to allow the time delay circuit to reset before another application can be obtained.

Note:

Apply to one windshield at a time. Do not apply to second windshield until residue is washed off and repellency is established on first windshield.

Rain repellent may be used any time rain intensity requires the use of windshield wipers. When applied in light rain, a gel or foam may form when the repellent mixes with water.

3. Windshield Wipers Switch

Each pilot's No. 1 window is provided with an 28V DC (DC2 for LI; DC1 for RI) electric 4-speed windshield wiper. The two wipers are separate independent systems with a single 6-position (PARK-OFF-LOW-1/2-3/4-HIGH) control switch located on the pilot's overhead panel. The PARK position stows the wipers at the bottom of the windshield, and is spring-loaded to the OFF position. The LOW through HIGH positions select the speed of the wipers.

4. Emergency Exit Lights Unarmed Light

An amber light marked EMERGENCY EXIT LIGHTS UNARMED on the overhead panel will be on when the emergency exit lights switch is either in the ON or OFF positions, provided the battery switch is on.

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O12. ENGINE START PANEL

1. Continuous Ignition Switch

2,4,6,8. Switch Guards

3. Engine Access Door Light

5,7,9. Engine Start Switches

1. Continuous Ignition Switch

Provides low energy ignition for conditions requiring continuous ignition, such as icing conditions, or periods of moderate or greater turbulence.

5,7,9. Engine Start Switches

Three rotary switches marked ENGINE START with GROUND-OFF-IGN 1, IGN 2-FLIGHT positions are on the overhead panel. With this switch in the GROUND position, power (BATT BUSS) is supplied to open the start valve. With this switch in the GROUND or FLIGHT position, the 20-joule ignition system is armed. This system is energized when the engine start lever is advanced out of the CUTOFF position.

The starter rotates the engine until engine sustaining speed is reached (35-40% N2 RPM). At this speed, the pilot releases the start switch which interrupts electrical power to the starter valve causing it to close, disengaging the starter. A pressure rise is indicated on the duct pressure gauge confirming starter valve closure.

Low pressure air from the external air source, crossbleed air from an operating engine, or compressed air from the auxiliary power unit is used for starter operation.
The access door for the pneumatic ground service connection is on the lower right side of the fuselage adjacent to the tailskid.

The pneumatic duct pressure indicator, used to check pneumatic manifold pressure available for starting and to check starter cutout during starts, is on the Second Officer's upper panel.
On some aircraft, the engine start switches on the overhead panel have three positions: GROUND-OFF-FLIGHT. They are spring-loaded from the GROUND position to the OFF position, but will remain in FLIGHT, if selected.

The FLIGHT or GROUND positions arm the high energy dual ignition system. In the GROUND position, in addition to arming the ignition system, the starter valve is energized and opens allowing the starter to accelerate the N2 rotor. The FLIGHT position is used for inflight starting, and provides I high energy ignition without engaging the starter. On some aircraft, a continuous ignition switch provides low energy ignition for conditions requiring continuous ignition, such as icing conditions, or periods of moderate or greater turbulence. On the other aircraft, low energy continuous ignition is provided anytime the ignition is in the FLIGHT position with the start lever in the IDLE position. When the start lever is in the START position high energy ignition is provided.

See also CENTRAL FORWARD PANEL, P09 CONTROL STAND - Engine start levers

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O13. ALTERNATE FLAPS PANEL

1. Switch Guard
2. Alternate Flap Master Switch

3,4. Alternate Flap Switches

2. Alternate Flap Master Switch

Operates bypass valve for inboard and outboard trailing edge flaps and leading edge flaps and stats. Turns on Standby System pump. Arms alternate flap switches.

3,4. Alternate Flap Switches

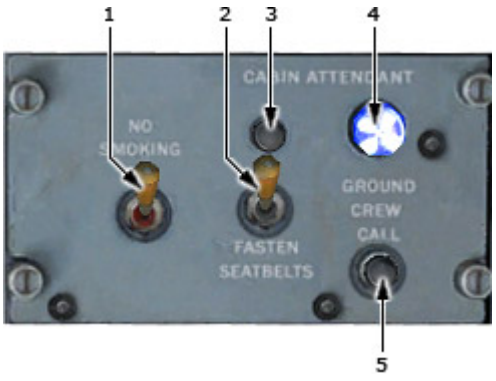
These two switches on the overhead panel are adjacent to the alternate flaps master switch. The switches, marked INBD and OUTBD, have UP-OFF-DN positions and are spring-loaded from the DN position to the OFF position.

When either alternate flap switch is in the DN position, the corresponding trailing edge flaps extend electrically and the leading edge flaps standby drive shutoff valve will open causing all leading edge flaps and slats to extend.

When the alternate flap switches move from the DN position to the OFF position, the leading edge flaps and slats will continue to extend, or remain extended, as long as the alternate flaps master switch is in the ON position. The trailing edge flaps will stop.

When the alternate flap switches are in the UP position, with the leading edge flaps and slats extended and the alternate flaps master switch in the ON position, the leading edge flaps and slats will remain extended and the corresponding trailing edge flaps will retract. The leading edge flaps and slats cannot be retracted using the alternate flap system.

O14. CABIN CALL PANEL



1. No Smoking Switch
2. Fasten Seat Belts Switch
3. Cabin Attendant Call Switch
4. Cabin Attendant Call Light (blue).
5. Ground Crew Call Switch

1. No Smoking Switch

A switch marked NO SMOKING with ON-OFF positions.

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2. Fasten Seat Belts Switch

A switch marked FASTEN SEAT BELTS with ON--OFF positions.

With this switch in the ON position a chord chime will sound .

3. Cabin Attendant Call Switch

When an attendant call button is depressed a two stroke chime will sound.

4. Cabin Attendant Call Light (blue)

Illuminates and single-tone chime sounds in cockpit while captain call switch is pressed at either attendant's panel.

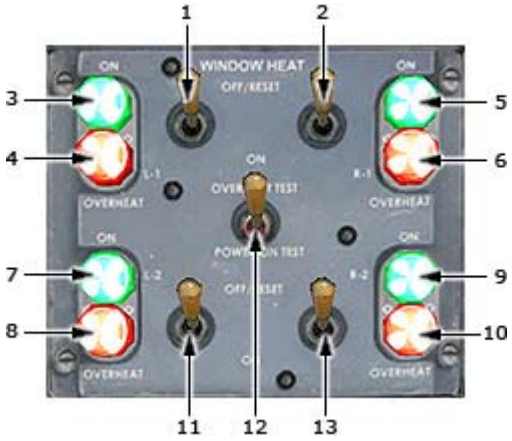
5. Ground Crew Call Switch

When the ground crew call switch is depressed, the horn will sound to alert the ground crew.

O15. VOICE (TAPE) RECORDER UNIT

1. Voice Recorder Monitor Jack
2. Voice Recorder Indicator
3. Voice Recorder Area Microphone
4. Voice Recorder Test Switch
5. Voice Recorder Bulk Erase Switch

O17. WINDOW HEAT PANEL



1,2,11,13. Window Heat Switches

3,5,7,9. Window Power On Lights

4,6,8,10. Window Overheat Lights

12. Window Heat Test Switch

1,2,11,13. Window Heat Switches

Four window heat switches on the overhead panel are marked WINDOW HEAT L1 and L2-R1 and R2. Each has ON--OFF/RESET positions.

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In the ON position, the following occurs: Power is available to the respective window's proportional heat control unit which provides modulated power in building up to and maintaining a window operating temperature; power is directed to heat the eyebrow windows (No. 4 and No. 5) on the corresponding side (left or right); and the overheat monitoring relay unit is energized. Power is also applied to the perimeter heat circuit on the No 1 and No. 2 windows.

In the OFF/RESET position, the heat control system is de-energized, or in the event of an overheat condition, the overheat light is turned out and the system is reset for operation.

Perimeter heat is applied to the L and R windshields to prevent delamination, and is activated by the L-1 and R-1 window heat switches. To deactivate the perimeter heaters, pull the associated L or R #4 and #5 eyebrow circuit breakers on the P6-1 panel.

Perimeter heat is currently being incorporated for both the L-2 and R-2 sliding windows. It will be controlled by the L-2 and R-2 window heat switches.

3,5,7,9. Window Power On Lights

Four lights (green) marked on are adjacent to the window heat switches. Each light will illuminate when power is available to the respective heat control unit and its output exceed 5 watts.

4,6,8,10. Window Overheat Lights

Four overheat indicating lights (amber) marked OVERHEAT are directly below each power-on light. The overheat light will illuminate when the heat control unit is directing power to its respective window and the window temperature is excessive. All lights are push-to-test type.

12. Window Heat Test Switch

A switch on the overheat panel has momentary POWER ON TEST-OVERHEAT TEST and center OFF positions. Both test positions require the window heat switches to be on.

In POWER ON TEST, the temperature controller's power output is verified to each window (4 green lights).

In OVERHEAT TEST, an overheat condition is simulated, and the overheat circuit's monitoring reliability is checked (4 amber lights). On old type of controllers, the power on green lights go out immediately upon illumination of amber overheat lights. With a newer type of controller installed on various aircraft, the power on green light will remain on for 55 seconds +_ 15 seconds after power is removed. This will occur even when the overheat trip is operated. In this case, both amber and green lights will be on for a short period of time until the power on lamp goes out. Apart from this operational differences, both units are physically and functionally interchangeable.

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O18. ANTI-ICE PANEL

1. Anti-Ice Duct Temperature Indicator
2. Anti-Ice Duct Overheat Light (Amber)
3. Anti-Ice Duct Temperature Selector

1. Anti-Ice Duct Temperature Indicator

Temperature indication as determined by duct temperature selector.

2. Anti-Ice Duct Overheat Light (Amber)

ILLUMINATED -

- Excessive temperature in left or right wing anti-ice supply, or duct.
- Engine 2 cowl duct.
- Independent of duct temperature selection.

3. Anti-Ice Duct Temperature Selector

Determines source of temperature displayed by duct temp indicator. ENG 1 - Wing anti-ice left supply duct temperature. ENG 2 - Engine 2 cowl duct temperature. ENG 3 - Wing anti-ice right supply duct temperature.

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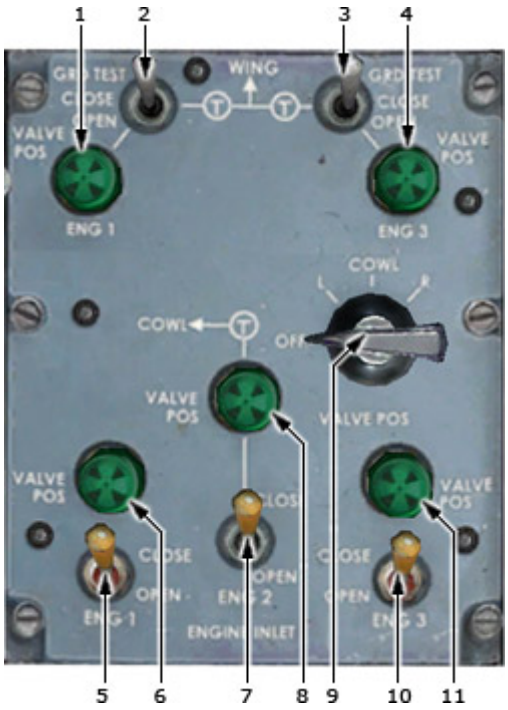
O19. WING, ENGINE AND COWL ANTI-ICING PANEL



1,4. Wing Anti-Ice Valve Position Light (Green)

2,3. Wing Anti-Ice Switch

5,7,10. Engine Inlet Anti-Ice Switches

6,8,11. Engine Inlet Anti-Ice Valve Position Lights (Green)

9. Anti-Ice Valve Position Light Selector

1,4. Wing Anti-Ice Valve Position Light

The lights marked VALVE POS, ENQ 1, ENG 3 are on the overhead panel. The lights will illuminate if the position of the valves in the anti-ice supply duct are in agreement with the wing anti-ice switch positions, and the anti-ice valve position light selector is in the wing position.

2,3. Wing Anti-Ice Switch

The switches are spring-loaded to close from the momentary GRD TEST position.
When the switches are in the OPEN position, the respective 13th stage anti-ice bleed valve opens. Thirteenth stage air flows through an ejector where it draws in, and mixes with, sixth stage air. The mixed air flows through the respective wing anti-ice shutoff valve, which is also opened by the wing anti-ice switch.

From the wing anti-ice shutoff valve, the heated air is ducted to the wind leading edges.

The landing gear safety switch prevents wing anti-ice operation with the switch in the open position during ground operation.

5,7,10. Engine Inlet Anti-Ice Switches

These switches marked ENGINE INLET, ENG 1. ENG 2, ENG 3, with OPEN-CLOSE positions. Each switch controls three bleed air duct shut-off valves for the respective engine (left 8th stage, 13th stage, right 8th stage). In addition, the switch for #2 engine controls the 6th stage bleed valve.

6,8,11. Engine Inlet Anti-Ice Valve Position Lights (Green).

These lights marked VALVE pos, ENG I, ENG 2, ENG 3. The lights provide a visual check of agreement between the control valve position and their respective control switch position.

Illuminated - valve position agrees with switch position.

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9. Anti-Ice Valve Position Light Selector

The five position rotary switch is used in conjunction with the lights to check Anti-Ice Valve position. The switch is marked OFF--L--COWL-R--WING.

1. When in "L" (LEFT) position, the three valve position lights are connected to their respective engines left 8th stage anti-ice valve. If each valve position agrees with its control switch position (either OPEN or CLOSE), the position lights illuminate.

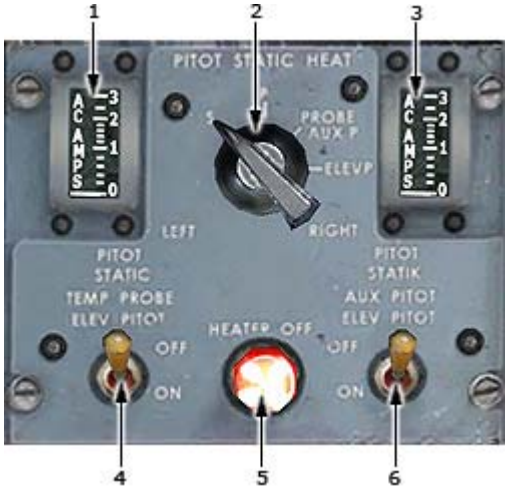
Should any of the three valves be in a position opposite to its switch, the respective light will be xtinguished.

2. When in "R" (RIGHT) position, the three valve position lights are connected to the three right 8th stage valves. Again, if each valve position agrees with its control switch, the respective position light illuminates.

3. The COWL position, checks agreement of the three 13th stage valves. In addition, for engine 2, the 6th stage valve is wired in series with the 13th stage valve-thus the #2 light will not illuminate unless both valves agree with the control switch position.

4. WING, checks the position of the wing anti-ice valves, in relation to the wing anti-ice switch position.

O20. PITOT STATIC HEAT PANEL



1,3. Pitot Static Ammeters

2. Pitot Static Heat Ammeters Selector

4,6. Pitot Static Heat Switches

5. Heater OFF Light (Amber)

1,3. Pitot Static Ammeters

The two AC ammeters marked LEFT and RIGHT. The ammeters display current drain for corresponding left and right heating units.

2. Pitot Static Heat Ammeters Selector

This selector marked PITOT STATIC HEAT with S. P, T. PROBE, AUX P--ELEV P positions. The selector is used in conjunction with the two AC ammeters to compare current drain for corresponding left and right sensor heaters. The selector is spring-loaded to "P" (PITOT) position.

4,6. Pitot Static Heat Switches

These switches are on the overhead panel. The left switch is marked PITOT STATIC.TEMP PROBE, ELEV PITOT; and the right switch is marked PITOT STATIC, AUX PITOT, ELEV PITOT. Each switch has OFF-ON positions.

The left switch controls the heating of the left static ports, left pitot, temperature probe and left elevator pitot. The right switch controls the heating of the right static ports, right pitot, auxiliary pitot and right elevator pitot. Current for the left pitot heater and the three left static port heaters is supplied from the essential AC bus to ensure that power is available from any generator.

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5. Heater OFF Light (Amber)

Illuminated:
- Pitot static heat switch OFF.
- Pitot static heat switch ON and left or right pitot probe heater inoperative.

O21. STANDBY MAGNETIC COMPASS

1. Compas Correction Card

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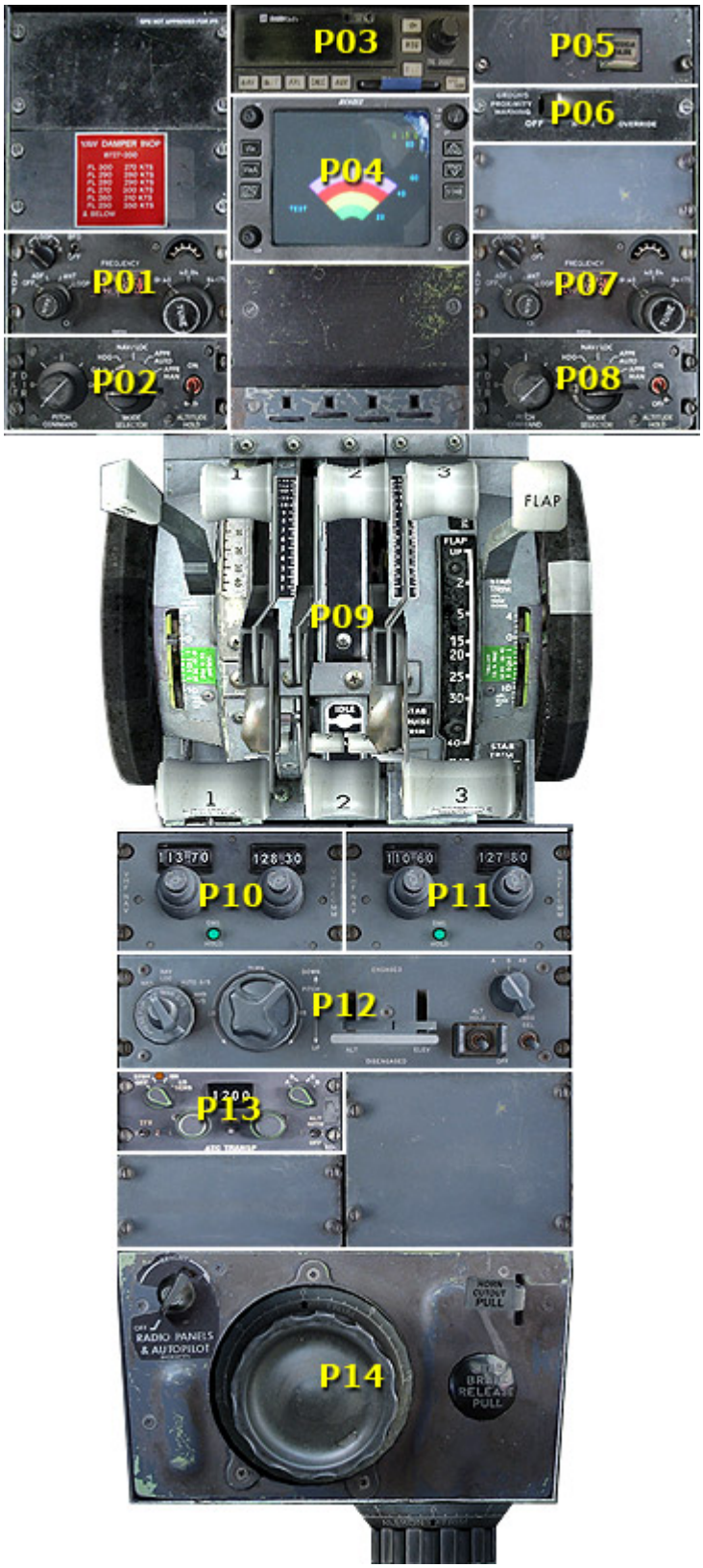
AISLE STAND



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Panels duplicated in 2D are listed in bold font.

P01,P07. ADF Control Panel
P02,P08. Flight Director Controls
P04. Radar Control Panel
P05. Windshear Failure Light
P06. Flap Position Switch
P09. Control Stand
P10,P11. VHF NAV/COMM Control Panel
P12. Autopilot Panel
P13. Transponder/TCAS Control Panel
P14. Aft Pedestal Panel

P01,P07. ADF CONTROL PANEL

1. Loop Control
2. Beat Frequency Oscillator (BFO) Switch
3. Frequency Indicator
4. Tuning Meter
5. Volume Control
6. Volume Control Function Selector
7. Frequency Band Selector
8. Frequency Band Selector Tuning Control

1. Loop Control

Switch has L-R positions, fast or slow. When moved left or right, the phasing in the fixed loop antenna will be shifted providing the effect of rotating the antenna. Operates only in LOOP function. Used to determine bearing information by rotating the loop antenna right or left while observing the tuning meter for minimum deflection at the aural null position

2. Beat Frequency Oscillator (BFO) Switch

OFF
- Undistorted voice reception is possible.

BFO
- Precise tuning is possible when the function selectoris in the ANT position.

The BFO provides a tone for unmodulated (CW) signals.

4. Tuning Meter

Displays relative strength of signal being received. Most desirable reception is achieved by tuning for maximum needle deflection.

6. Function Selector

OFF
- Power off.

ADF
- Both the sense and loop antennas operate; bearing information is displayed on the RMI's.

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ANT
- Only the sense antenna is used. The receiver is used for reception of audio signals; no bearing information is displayed.

LOOP
- Determination of bearing to station is made by manual rotation of the loop antenna until aural null, or loss of signal, occurs. Determined by listening to the signal or observing the tuning meter for minimum needle deflection. Best position for audio reception during severe precipitation static.

P02,P08. FLIGHT DIRECTOR CONTROLS

1. Pitch Command Control
2. Autopilot Mode Selector
3. Altitude Hold

3. Altitude Hold

Autopilot holds constant airplane altitude if elevator switch engaged. Pitch controller is ineffective. On APPR AUTO switch trips OFF when glide slope engages.

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P04. RADAR CONTROL PANEL

RADAR OPERATIONAL CONTROLS

1. BRT

Controls brightness of the indicator display (CW rotation for max brightness).

2. Wx

Selects the Wx (weather) mode of operation. "Wx" will appear in the lower left of the display. Wx colors are: Black for no returns, Green for weak returns, Yellow for moderate returns, Red for heavy returns and Magenta for intense returns.

3. WxA

Selects the WxA (weather-alert) mode of operation. "WxA" will appear in the lower left of the display. WxA colors are: Black for no returns, Green for weak returns, Yellow for moderate returns, Red for heavy returns and Magenta for intense returns. When the WxA mode is selected, magenta areas of storms flash between magenta and black at a 1 HZ rate.

4,9. RANGE

Clears the display and advances the indicator to the next range. The upper button increases range, the lower button decreases it. The radar display ranges are: 5, 10, 20, 40, 80, 160, 240, 320. The selected range is displayed in the upper right corner of the display with the range ring distance displayed along the right edge.

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5. STAB

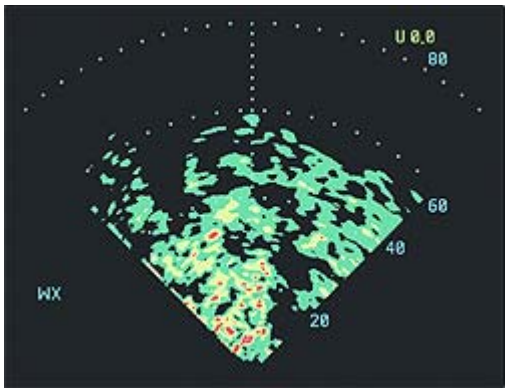
The On position provides normal stabilization. The Off position disables and the stabilization antenna tilt angle is controlled by the tilt control only.

6. GAIN

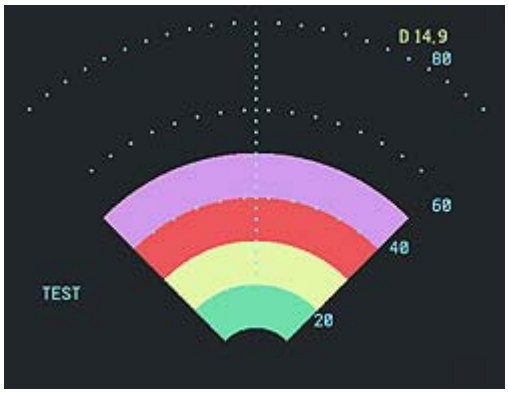
The gain knob adjusts the radar gain from 0 to -20 dB (CCW rotation reduces gain).

7. Radar Mode Selector

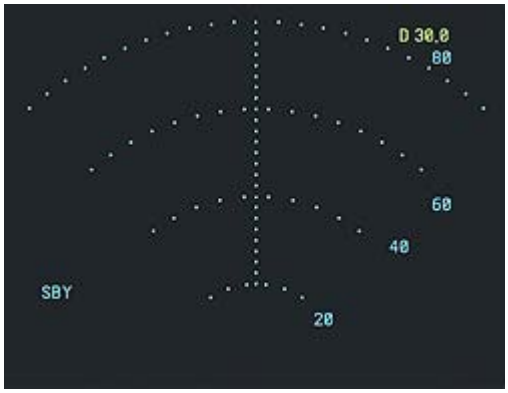
Note:
To select mode click the corresponding inscription shown as outlined red on the Weather Radar panel screenshot above.



ON - Selects the normal condition of operation for weather detection. The system will transmit after a 60 second warm-up time is completed. The radar system initializes to the Wx mode, 80 nm.
Note: The 60 second warm up period can be monitored upon power up of the system. When the knob is switched directly from OFF to ON mode, the display will blank. Just before the warm up period is complete, the screen will turn black for a few seconds, then the radar will begin transmitting and the screen will display radar returns. No radar transmissions occur until the warm up period is complete.



TEST - The multicolored arc display test pattern is displayed in this mode of operation. The test pattern is initialized and sized to fit the 80 nm range and can also be scaled with the range select buttons. No radar transmissions occur while TST is selected. TEST will appear in the lower left of the display.



STBY - Fully energizes the system circuitry but no radar transmissions occur in the SBY mode of operation. The antenna is parked at 0 degrees azimuth and 30 degrees tilt down with the antenna drive motors locked. SBY will appear in the lower left of the display.

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OFF - Removes primary power from the radar indicator, but the radar still has power applied. The radar will remain active with no radar transmissions occurring, for up to a maximum time of 30 seconds. This time delay allows time to park the antenna at 0 degrees azimuth and 30 degrees tilt down.

8. ON Light

10. TILT/STAB

Permits manual adjustment of antenna tilt 15° up or down for best indicator presentation.
The tilt angle is displayed (yellow) in the upper right corner of the display: D = Down, U = Up..

THEORY OF OPERATION

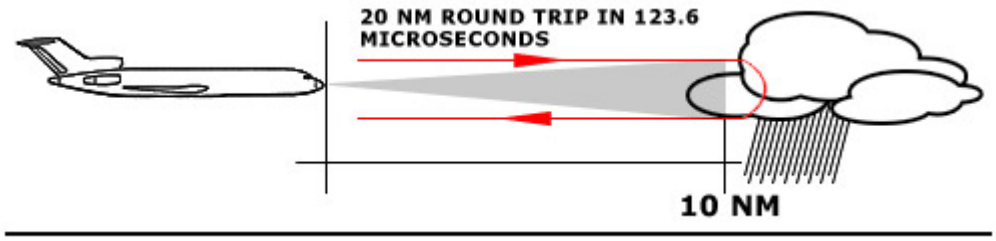
The primary use of this radar is to aid the pilot in avoiding thunderstorms and associated turbulence. Since each operator normally develops specific operational procedures for use of weather avoidance radar, the following information is presented for use at the operator's discretion.

Operational techniques for the radar are similar to earlier generation weather avoidance radars. The proficient operator manages antenna tilt control to achieve best knowledge of storm height, size, and relative direction of movement.

RADAR PRINCIPLES

Radar is fundamentally a distance measuring system using the principle of radio echoing. The term RADAR is an acronym for Radio Detecting and Ranging. It is a method for locating targets by using radio waves. The transmitter generates microwave energy in the form of pulses. These pulses are then transferred to the antenna where they are focused into a beam by the antenna. The radar beam is much like the beam of flashlight. The energy is focused and radiated by the antenna in such a way that it is most intense in the center of the beam with decreasing intensity near the edge. The same antenna is used for both transmitting and receiving. When a pulse intercepts a target, the energy is reflected as an echo, or return signal, back to the antenna. From the antenna, the returned signal is transferred to the receiver and processing circuits located in the receiver transmitter unit. The echoes, or returned signals, are displayed on an indicator.

Radio waves travel at the speed of 300 million meters per second and thus yield nearly instantaneous information when echoing back. Radar ranging is a two-way process that requires 12.36 micro-seconds for the radio wave to travel out and back for each nautical mile of target range. As shown in the distance illustration below, it takes 123.6 micro-seconds for a transmitted pulse of radar energy to travel out and back from an area of precipitation 10 nautical miles away



WEATHER RADAR PRINCIPLES

Airborne weather avoidance radar, as its name implies, is for avoiding severe weather, not for penetrating it. Whether to fly into an area of radar echoes depends on echo-intensity, spacing between the echoes, aircraft capabilities and pilot experience. Remember that weather radar detects only precipitation drops; it does not detect minute cloud droplets, nor does it detect turbulence. Therefore, the radar provides no assurance of avoiding instrument weather in clouds and fog. The indicator may be clear between intense echoes; this

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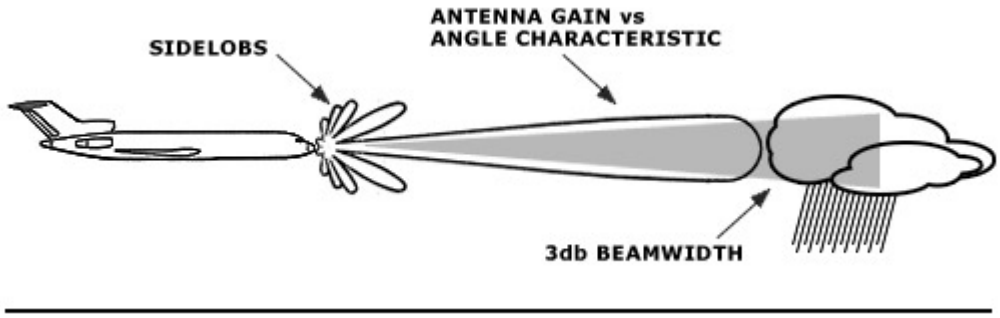
clear area does not necessarily mean it is safe to fly between the storms and maintain visual sighting of them.

RADAR BEAM ILLUMINATION

Probably the most important aspect of a weather radar is the antenna beam illumination characteristic. To make a proper interpretation of what you are seeing on the display, you must have an understanding of what the radar beam "is seeing". The following figure is a side view of the radar beam characteristic with a storm depicted at a distance that causes the size of the storm to just fill the 3 dB beamwidth. This would be the typical situation for a storm at approximately 40 nautical miles with a 12 inch diameter antenna. It's important to understand and visualize this situation, to enhance your understanding of the rest of this manual.



RADAR REFLECTIVITY

What target will reflect the radar's pulses and thus be displayed on the indicator? Only precipitation will be detected by an X-band weather radar. Therefore weather radar does not detect clouds, thunderstorms or turbulence directly. Instead, it detects precipitation which may be associated with dangerous thunderstorms and turbulence. The best radar reflectors are raindrops and wet snow or hail. The larger the raindrop the better it reflects. Because large drops in a small concentrated area are characteristic of a severe thunderstorm, the radar displays the storm as a strong echo. Drop size is the most important factor in high radar reflectivity.

The radar display has been calibrated to show five levels of target intensity: Black (level 0), Green (level 1), Yellow (level 2), Red (level 3), and Magenta (level 4).

PREFLIGHT PROCEDURES

The system never transmits in the OFF, SBY or TST modes.

Accomplish the following procedures completely and exactly.

1) Place the radar controls in the following positions:
- Function switch to TST
- Tilt to UP 7 (will be shown on the indicator display, upper right corner).

The test pattern will appear.

2) With the function switch in TST or SBY, taxi to a clear area where there are no people, aircraft, vehicles, or metallic buildings within approximately 100 yards.

3) Rotate the function switch to ON. The indicator will automatically display in the Wx mode and 80 nm range. Weather targets will be displayed in green, yellow, red, or magenta. (Note: A 60 second warm up time period is required before the system will transmit).

4) Press the range-down button to display 40 nm as the maximum range.

5) Press the WxA button and observe that magenta areas (if any) flash.

6) Repeat the manual tilt adjustment, this time between the 0 and down 15 degrees positions.

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7) Return the function switch to TST or SBY before taxiing!

8) When you are ready for weather detection (after takeoff or just before), place the function switch to ON.

OPERATION IN-FLIGHT - GENERAL

It is the purpose of this section to help you become a proficient radar operator as soon as possible. However, it is realized that proficiency can only improve with usage. It is, therefore, recommended that the operator become familiar with the operation of the system during fair weather instead of while trying to penetrate a storm front.

This section concerns itself with a more detailed discussion of some of these controls and how to make the most efficient use of them.

Note

Your radar is a weather-avoidance device. It should never be used for weather-penetration. It will help you see and plan avoidance maneuvers around significant weather encountered during flight.

TILT MANAGEMENT

Effective antenna tilt management is the single, most important key to more informative weather radar displays. The prime factors must be kept in mind for proper tilt management:

- The center of the radar beam is referenced to the horizon by the aircraft vertical reference system.
- Adjusting the antenna tilt control will cause the center of the radar beam to scan above or below the plane of the attitude reference system.

When flying at high altitudes, the use of proper tilt management ensures observation of weather targets without over scanning. For example, a low altitude storm detected on the long range setting may disappear from the display as it is approached. While it may have dissipated during your approach toward the storm, don't count on it. It may be that you are directing the radiated energy from the antenna above the storm as you get closer. Judicious management of the antenna tilt control will avoid over-scanning a weather target.

EARLY DETECTION OF ENROUTE WEATHER

To set the antenna tilt to optimize the radar's ability to quickly identify significant weather, follow these steps:
1) Select the Wx (weather) mode of operation. Adjust Brightness control as desired.
2) Select the 50 or 80 nm range.
3) Adjust the antenna tilt to watch the strongest returns seen on the display.

TARGET RESOLUTION

The ability of a weather avoidance radar system to resolve and display two or more closely spaced targets is limited in range by the transmitted pulse width and display range and in azimuth by the antenna beam width.

RANGE RESOLUTION

The transmitter pulse width in the radar is 4 micro-seconds, yielding a receiver range resolution of approximately 1/3 nautical mile.

AZIMUTH RESOLUTION

The ability of the radar to resolve adjacent targets in azimuth is a function of the beam width of the antenna and the range to the target. The diameter of this radiated beam increases as it gets further away from the aircraft.

Targets separated by a distance less than the beam diameter (at the target distance) will merge and appear on the indicator as "one."

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PATH PLANNING

Remember to plan a deviation path early. Simply skirting the red or magenta portion of a cell is not enough. Plan an avoidance path for all weather echoes which appear beyond 100 nautical miles since this indicates they are quite intense.

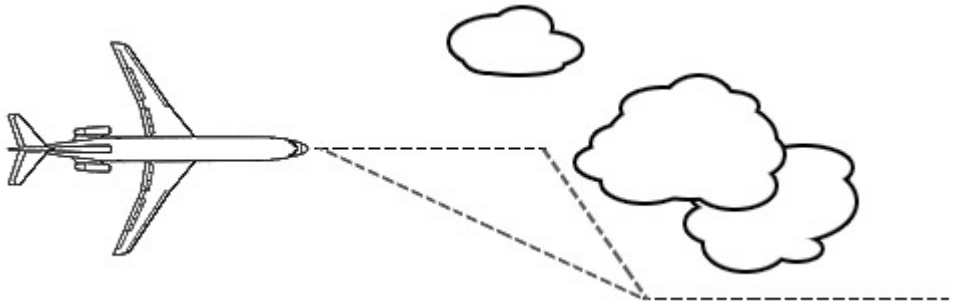
The most intense echoes are severe thunderstorms. Remember that hail may fall several miles from the cloud, and hazardous turbulence may extend as much as 20 nautical miles; therefore, echoes should be separated by at least 40 nautical miles before you fly between them. As echoes diminish in intensity, you can reduce the distance by which you avoid them.

PATH PLANNING CONSIDERATIONS

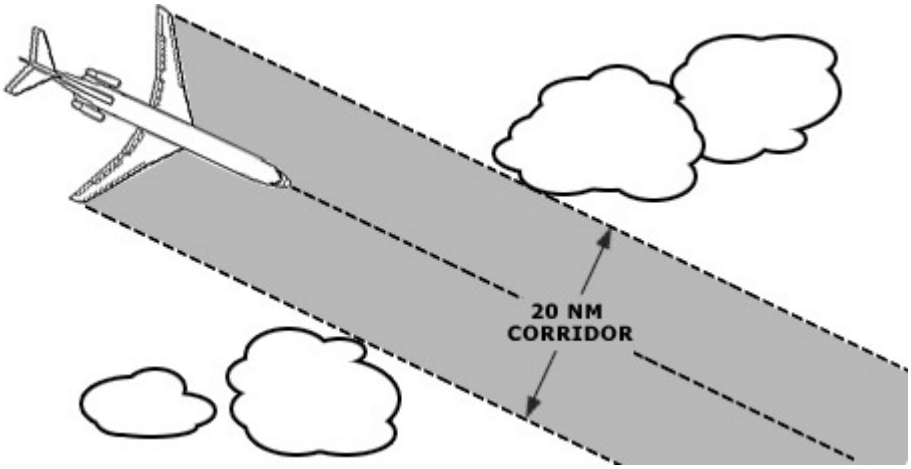
• Avoid cells containing magenta and red areas by at least 20 nautical miles.
• Do not deviate downwind unless absolute necessary. Your chances of encountering severe turbulence and damaging hail are greatly reduced by selecting the upwind side of the storm
• If looking for a corridor, remember corridors between two cells containing magenta and/or red areas should be at least 40 nautical miles wide from the outer fringes of the radar echo. The magenta displays areas of very heavy rainfall and statistically indicates a high probability of hail.

Note:

Do not approach a storm cell containing magenta and red any closer than 20 nautical miles. Echoes should be separated by at least 40 nautical miles before attempting to fly between them.



Cells beyond 75 nautical miles are areas of substantial rainfall, do not wait for red or magenta to appear. Plan and execute evasive action quickly to minimize "doglegging."



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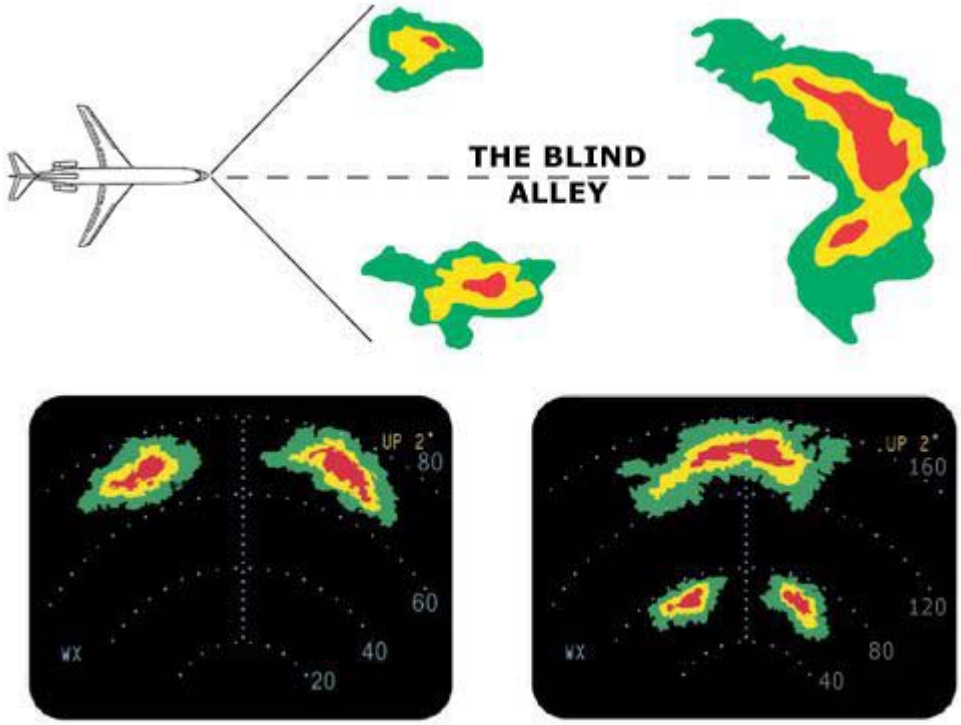
When a complete detour is impractical, penetration of weather patterns may be required. Avoid adjacent cells by at least 20 nautical miles.

A "Blind Alley" or "Box Canyon" situation can be very dangerous when viewing the short ranges. Periodically switch to longer-range displays to observe distant conditions. As shown below, the short-range returns show an obvious corridor between two areas of heavy rainfall but the long-range setting shows a larger area of heavy rainfall.



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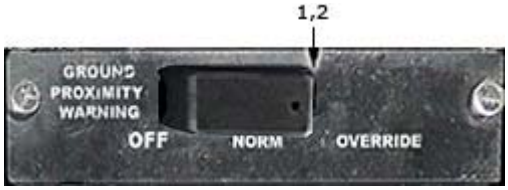
P05. WINDSHEAR FAILURE LIGHT

Windshear Failure Light

Illuminates when significant mailfunction is detected by built-in test equipment.

P06. FLAP POSITION SWITCH



1. Flap Position Switch

2. Switch Guard

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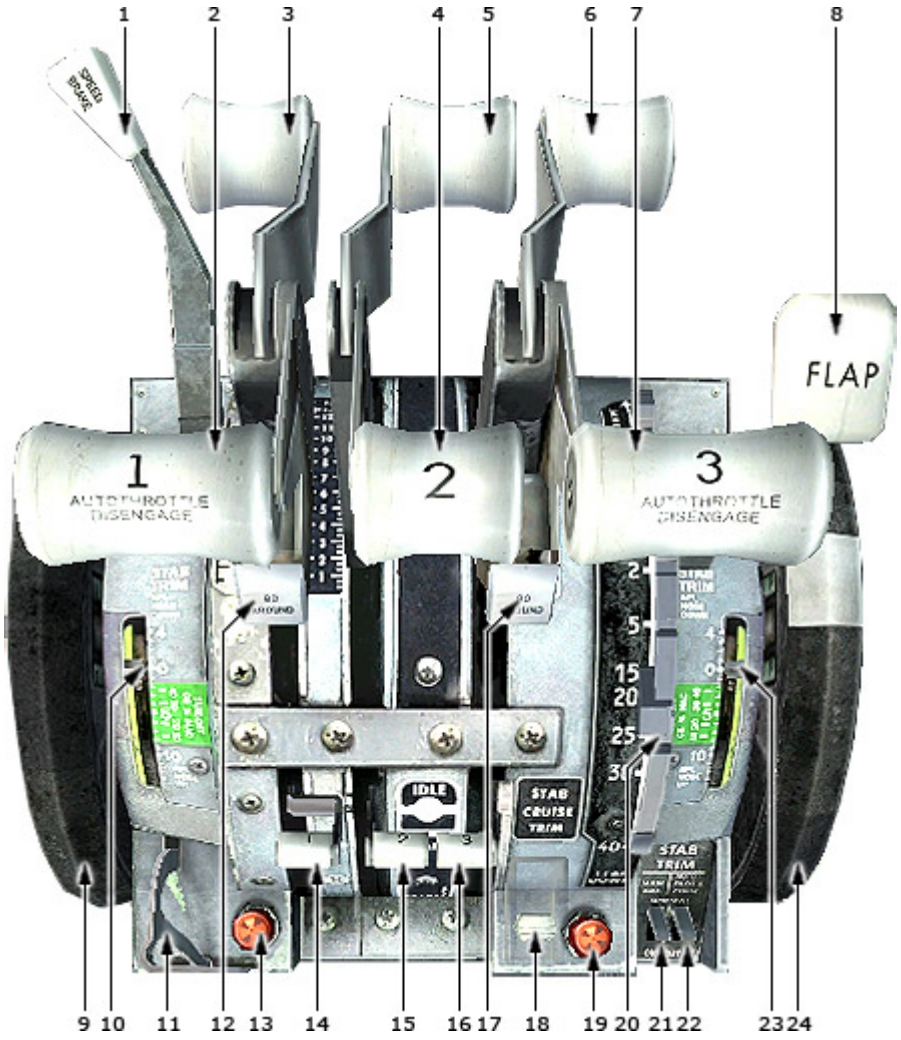
P09. CONTROL STAND



1. Speedbrake Lever
2,4,7. Thrust Levers
3,5,7. Reverse Thrust Levers
8. Flap Lever
9,24. Trim Wheel
10,23. Stabilizer Trim Indicator
11. Parking Brake Lever
12,17. Go-Around Switch
13. Parking Brake Warning Light
14,15,16. Engine Start Levers
18. Stabilizer Cruise Trim Switch
19. Stabilizer Trim Light
20. Flap Lever Scale
21,22. Stabilizer Trim Cutout Switches (Main Electric, Autopilot and Cruise)

1. Speedbrake Lever and Scale

A lever on the control stand marked SPEEDBRAKE, can be moved over a scale with 0°, 5°, 10°, 20°, 30° and 40° markings.

A detent is at the 0° position. The lever can be lifted over the 0° detent. Friction holds the speedbrake lever in any other position on the scale.

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The speedbrake lever positions the spoiler mixer, ratio changer and ground spoiler control valve through a rod and cable arrangement.

The spoiler mixer positions the flight spoilers according to inputs received from the speedbrake lever and the roll control system.

2,4,7. Thrust Levers

Control engine forward thrust.
The thrust levers can only be advanced if the reverse thrust levers are down.

3,5,7. Reverse Thrust Levers

Each throttle has an additional handle which is used to actuate the thrust reversers. The reverse thrust lever pivots about a point near the top of the throttle.

If reverse thrust is required, the throttle must be retarded to IDLE and then the reverse thrust lever must be pulled up. Further aft movement of the lever will increase reverse thrust.

8. Flap Lever

The lever controls both inboard and outboard flap hydraulic drive units.
Detents are provided at the flap up (0°), 2°, 5°, 15°, 25°, 30° and 40° positions on the flap quadrant adjacent to the lever.

Gates which interrupt flap lever travel are at the 2° and 25° positions.

10,23. Stabilizer Trim Indicators

A stabilizer trim indicator and pointer adjacent to each manual trim wheel is calibrated to indicate full stabilizer travel from 2.5 units airplane nose down to 12.5 units airplane nose up.

The main electric trim system will operate the stabilizer from 0.6 units airplane nose up to 12.25 units airplane nose up.

14,15,16. Engine Start Levers

Three engine start levers with CUTOFF-IDLE detents are on the control stand. This lever operates the windmill bypass and shutoff valve in the FCU. With this lever in the IDLE detent, fuel if supplied to the engine. In the CUTOFF detent, all fuel supply to the engine is shut off. With this lever in the IDLE detent and with the engine start switch in the GROUND or FLIGHT position, the 20-joule ignition system is energized.

The start levers control the main fuel shutoff valves when in the CUTOFF position.

11. Parking Brake Lever

The parking brake lever on the control stand can be set when the brakes are fully applied, to latch the brakes in the depressed position.
When the parking brake is set, hydraulic return from the main gear antiskid valves will be blocked and the anti-skid system will be de-energized.

13. Parking Brake Warning Light

This red light on the control stand will illuminate when the parking brake handle is in the SET position.

18. Stabilizer Cruise Trim Switch

This switch is spring-loaded to the center or neutral position.
Manual operation of the switch controls operation of the stabilizer trim actuator by the cruise trim motor.

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When this switch is actuated, the autopilot pitch channel is disengaged and the stabilizer out of trim light will not operate.

19. Stabilizer Trim Light

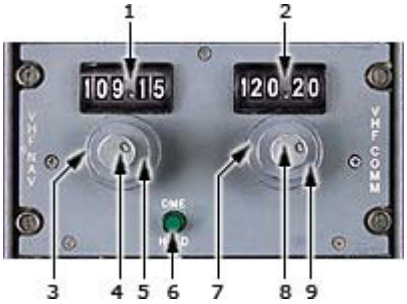
An amber light on the control stand will illuminate when the stabilizer main electric trimmotor is operating, or when the cruise and autopilot trim motor is operated by the stabilizer cruise trim switch
The light will not be on when the autopilot operates the cruise and autopilot trim motor.

20. Flap Lever Scale

All Indicated flap positions are detented.

In addition, flap positions 2 and 25 are gated to interrupt flap lever travel to cross check airspeed with flap positions.

P10,P11. VHF NAV/COMM CONTROL PANEL



1. NAV Frequency Indicator
2. COMM Frequency Indicator
3,7. NAV Frequency Selector
4. NAV Volume Control
6. DME Override Button
5,9. COMM Frequency Selector
8. COMM Volume Control

1. NAV Frequency Indicator

Displays the frequency selected by the NAV Frequency Selector Knob.

2. COMM Frequency Indicator

Displays the frequency selected by the COMM Frequency Selector Knob.

3,5. NAV Frequency Selector

Selects frequency as shown in NAV frequency window. Rotate outer ring — changes the digits to the left of the decimal point. Rotate inner knob - changes the digits to the right of the decimal point.

6. DME Override Button

With DME function switch at OVERRIDE position, each system will track a DME signal at an ILS station up to a maximum of 200 miles.

7,9. COMM Frequency Selector

Selects frequency as shown in COMM frequency window. Rotate outer ring — changes the digits to the left of the decimal point. Rotate inner knob - changes the digits to the right of the decimal point.

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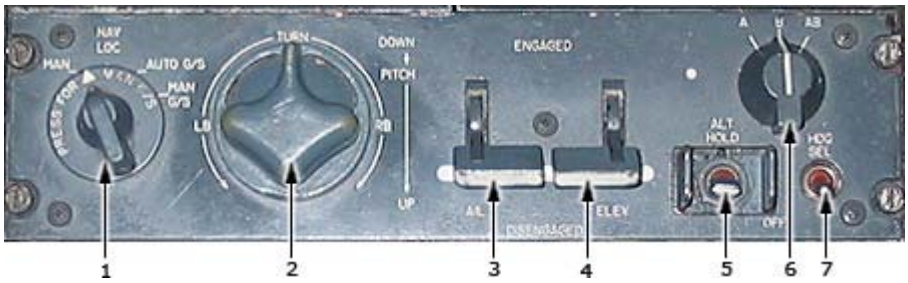
P12. AUTOPILOT PANEL



1. Autopilot Mode Selector
2. Autopilot Turn And Pitch Controller
3. Autopilot Aileron Switch
4. Autopilot Elevator Switch
5. Altitude Hold Switch
6. Pitch Channel Selector
7. Heading Select Switch

1. Autopilot Mode Selector

This control with MAN--NAV LOC--AUTO G/S--MAN G/S positions is on the aft electronic panel. The selector is held magnetically in all positions but MAN. The selector is spring-loaded to the MAN position.
The selector must be in the MAN. position to engage the autopilot.

In the MAN position the autopilot will maintain the magnetic heading and pitch that exists at the time the autopilot is engaged. If the airplane is in a bank at the time of engagement, the autopilot will level the wings. Rotating the turn and pitch controller causes the airplane to roll into a turn. When the desired heading is reached and the controller is centered, the autopilot will maintain the new heading. Altitude hold will function in this mode.

If the heading select switch (on the autopilot control panel) is engaged, the aircraft will turn to the heading selected by the heading cursor on the Captain's course indicator. If the turn and pitch controller is turned, the heading select switch will automatically switch to off.

With the mode selector in NAV LOC, AUTO G/S, or MAN G/S and the heading select switch engaged (HDG SEL), the autopilot will turn to or retain the heading selected by the heading selector on the Captain's CI until either the VOR radial or the localizer course selected on the Captain's CI is captured. At that time, the heading select switch will automatically switch to off.

In the NAV LOC position, the autopilot will maneuver the airplane to capture and track, correcting for wind, a localizer course or a VOR radial as selected on the course arrow of the Captain's course indicator.

In the AUTO GS position, the autopilot will track a localizer until the glideslope is intercepted; whereupon the glideslope will be captured and both the localizer and glideslope will be tracked for a COUPLED ILS approach. Altitude hold will function in this mode until the glideslope is captured.

If MAN G/s is selected some distance from the glideslope, the airplane will pitch down to establish the 700 feet/minute rate of descent, then if the glideslope is above, the airplane will pitch up the maximum amount to capture the glideslope from below.

2. Autopilot Turn and Pitch Controller

The autopilot turn and pitch controller is on the aft electronic control panel. The controller will rotate to right or left for right or left bank control and is provided with forward and aft movement for nose down or nose up pitch control.

The controller provides for turn control when the autopilot is in the MAN position only.

Pitch control is provided when the mode selector is in any position except AUTO G/s or MAN G/s after glideslope capture.

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When the autopilot altitude hold switch is in the ALT HOLD position, the pitch controller is de-energized.

3. Autopilot Aileron Switch

This switch marked AIL with ENGAGED-DISENGAGED. The switch is spring-loaded to the DISENGAGED position and will be magnetically held in the ENGAGED position only when the roll axis interlock circuits are satisfied.

When this switch is in the ENGAGED position, the autopilot will control the airplane about its roll axis from signals received from the vertical gyro, the autopilot turn and pitch controller or from navigational facilities as selected by the autopilot mode selector.

Note:
To engage the aileron switch, at least one yaw damper switch must be engaged

4. Autopilot Elevator Switch

A switch marked ELEV with ENGAGED-DISENGAGED positions. This switch, like the autopilot aileron switch, is spring-loaded to the DISENGAGED position and will be magnetically held in the ENGAGED position only when the pitch axis interlock circuits are satisfied.

When these circuits are completed and the switch is in the ENGAGED position, the autopilot will control the airplane about its pitch axis from signals received from the vertical gyro, the autopilot turn and pitch controller, or from such navigational facilities as selected by the autopilot mode selector.

Note:
To engage the elevator switch, the aileron switch must be engaged.

5. Altitude Hold Switch

The altitude hold switch on the aft electronic control panel has positions marked ALT HOLD-OFF and is spring-loaded to the OFF position. The switch is magnetically held in the ALT HOLD position.

The magnetic holding circuit will be broken and the switch will revert to the OFF position with the autopilot elevator switch in the DISENGAGED position.

With the switch in the ALT HOLD position, the autopilot controls the airplane about its pitch axis so as to maintain a constant barometric altitude as sensed by the air data computer system.

The pitch control function of the autopilot turn and pitch controller is inoperative when the autopilot altitude hold switch is in the ALT HOLD position.

6. Pitch Channel Selector

This selector is on the aft electronic panel and has a A--B-(INOP) positions. The AB position is deactivated. With the selector in the "A" position, the pitch channel controls pitch axis by selecting the left transfer valve, thereby selecting hydraulic system A as the source of power to control elevators.

When the selector is in the "B" position, the above is duplicated using "B" system hydraulics. Autopilot elevator switch will trip if pitch channel selector is moved.

7. Heading Select Switch

This switch on the aft electronic control panel has a center (OFF) position and a HDG SEL position. It is either magnetically held in the HDG SEL position or spring-returned to center off.

With the switch in the HDG SEL position, the autopilot is provided with compass system directional information.

The HDG SEL position may be used in the following modes: MAN, NAV LOC, AUTO G/S and MAN G/S. The switch will automatically return to the OFF position when the turn control knob is out of detent, or the localizer or VOR radial selected is captured.

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P13. TRANSPONDER/TCAS CONTROL PANEL

1. Function Selector
2. Power Light
3. ATC Display Window
4. ATC Display Range Selector
5. Altitude Source Selector

6-7,9-10. Code Selector Knobs

8. Ident Pushbutton
11. Relative Altitude Display Limit Selector

1. Function Selector

Selects operating mode.
STBY mode – places transponder and TCAS system to standby.

3. ATC Display Window

Displays Code set by ATC Code Selectors

4. ATC Display Range Selector

Selects display range of TCAS. To cycle through ranges use click zones - plus to cycle to the right and minus to cycle to the left.

5. Altitude Source Selector

Selects which of the transponders is in use – the other switched to standby.

6-7,9-10. Code Selector Knobs

Rotate to set code on ATC Display Window.

8. Ident Pushbutton

Initiates ident feature for ATC

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P14. AFT PEDESTAL PANEL

1. Radio Panels and Autopilot Lights Control
2. Rudder Trim Wheel and Indicator
3. Horn Cutout Lever
4. Aileron Trim Wheel and Indicator
5. Stabilizer Brake Release Knob

1. Radio Panels and Autopilot Lights Control

Controls intensity for the dial lights on the electronic control panels

2. Rudder Trim Wheel and Indicator

A rudder trim wheel on the control stand moves the rudder feel and centering cam in the vertical fin to produce rudder trim.

Linkage is through a separate rudder trim cable system. The amount of rudder trim is indicated by a pointer moving over a scale marked RUDDER TRIM, which is adjacent to the rudder trim wheel.

4. Aileron Trim Wheel and Indicator

Positions the aileron feel and centering spring through a gear and cable system. A pointer on the control stand indicates TRIM position.

Trim is ineffective in the manual reversion mode.

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FLIGHT ENGINEER UPPER PANEL

U01. DC Electrical Power Panel
U02,U03,U04. Electrical Power Panel
U05. Oxygen System Panel
U06. Air Conditioning System Panel
U07. Engine Start Valve Indicators
U08. Smoke Detection System Panel
U09. Wing Anti-Ice Auto Trip-Off and Fire Warning Panel
U10. Pneumatic System Panel
U11. Pressurization System Panel

U01. DC ELECTRICAL POWER PANEL

1. DC Voltmeter
2. DC Ammeter
3. DC Meters Selector
4. Switch Guard
5. Battery Switch

1. DC Voltmeter

Indicates DC voltage of selected source.

2. DC Ammeter

Indicates DC voltage of selected source.

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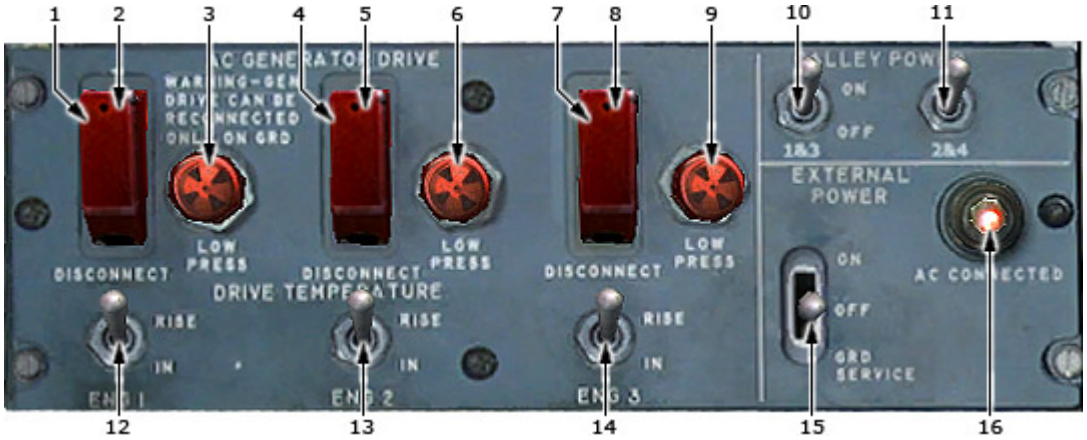
3. DC Meters Selector

TR Positions – Indicate transformer-rectifier current and TR bus voltage.
BAT Position – Indicates battery current and voltage when no AC power on airplane. Battery charging shows positive amps.

5. Battery Switch

ON – Battery serves as a back-up for battery busses.
OFF – Battery isolated from loads except those on hot batter busses, but continues to charge. Trips the APU (if running).

U02. ELECTRICAL POWER PANEL



1,4,7. Switch Guard
2,5,8. Generator Drive Disconnect Switch
3,6,9. Generator Drive Low Pressure Light (Amber)
10,11. Galley Power Switch
12,13,14. Generator Drive Temperature Switch
15. External Power Switch
16. External Power Connected Light (Clear)

2,5,8. Generator Drive Disconnect Switches

Disconnect drive from engine and trip generator breaker.

3,6,9. Generator Drive Low Pressure Lights (Amber)

Indicate oil pressure in the constant speed drive is below operating limits.

10, 11. Galley Power Switch

ON – Galley power available to galleys as selected.

12, 13, 14. Generator Drive Temperature Switch

RISE – Indicate oil temperature increase through generator drive.

IN – Indicate temperature of oil at in-put.

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15. External Power Switch

ON – External power on the bus tie. When external power is connected, the generator breakers and APU generator breaker automatically trips for overvoltage or phase unbalance faults.

OFF – If external power connected, external power DC bus, battery transfer bus, and external power 115V AC bus powered.

GND SERVICE – 115V AC transfer bus also powered.

16. External Power Connected Light (Clear)

ON – Ground power available at external power connection.

U03. ELECTRICAL POWER PANEL

1,10,19. Generator Drive Oil Temperature Indicator

2,11,21. Bus Tie Breaker Light (Amber)

3,12,20. Bus Tie Breaker Switch

4,13,23. Generator Breaker Light (Amber)

5,14,22. Generator Breaker Switch

6,15,25. Generator Field Light (Amber)

7,16,24. Generator Field Switch

8,17,26. Power Meter

9,18,27. Frequency Control Knob

2,11,21. Bus Tie Breaker Lights (Amber)

ON – Bus tie breaker open and generator operating isolated.

3,12,20. Bus Tie Breaker Switches

Open circuit between respective A.C. bus and bus tie. Automatically trips due to excitation faults or overload if respective generator breaker is closed. A phase unbalance on the bus tie will trip all bus tie breakers.

4,13,23. Generator Breaker Lights (Amber)

ON – Generator breaker open and generator disconnected from load bus.

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5,14,22. Generator Breaker Switches

Open circuit between respective generator and A.C. bus. Automatically trips due to generator drive speed faults, if the drive is disconnected, or if the generator field is off. Trips on engine shutdown. Closing a generator breaker trips the external power contactor or the APU generator breaker.

6,15,25. Generator Field Lights (Amber)

ON – Generator field relay open, and generator field deenergized. Generator electrically inoperative and essential power not available from this source.

7,16,24. Generator Field Switches

Turn off generator field. Automatically trips due to generator voltage faults, generator overload, or if engine fire switch pulled.

8,17,26. Power Meters

Indicates generator real (KW) or reactive (KVAR) load. Indication is controlled by KVARS switch on U04 ELECTRICAL POWER PANEL.

9,18,27. Frequency Control Knobs

Permits frequency adjustment of an isolated generator.

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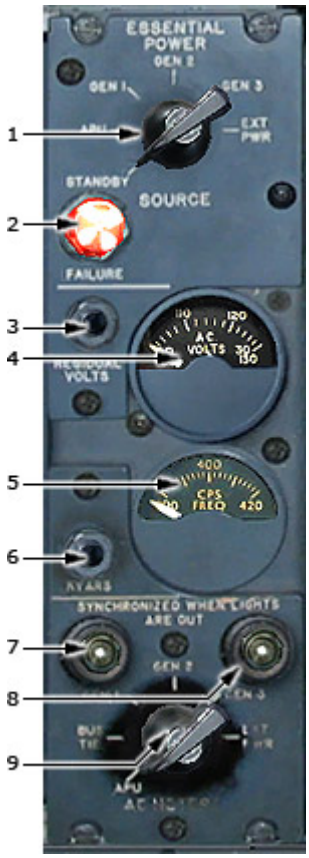
U04. ELECTRICAL POWER PANEL



1. Essential Power Selector
2. Essential Power Failure Warning Light (Red)
3. Residual Volts Switch
4. AC Voltmeter
5. Frequency Indicator
6. KVARS Switch

7,8. Synchronizing Lights (Clear)

9. AC Meters Selector

1. Essential Power Selector

Selects power source for essential AC bus. If no fault exists, a generator can supply essential power with the generator breaker tripped. Neither external power nor the APU can supply essential power unless it is on the sync bus and the #3 bus tie breaker is closed. In standby position, required flight instruments and radios are powered from battery bus and static inverter.

2. Essential Power Failure Warning Light (Red)

ON – loss of essential power. Master warning light also illuminates.

3. Residual Volts Switch

Changes voltmeter scale from 150 to 30 volts. Indicates residual generator voltage to check rotation and proper functioning.

4. AC Voltmeter

Indicates voltage as selected.

5. Frequency Indicator

Indicates frequency as selected.

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DO NOT USE FOR FLIGHT

6. KVARS Switch

Changes U03 ELECTRICAL SYSTEM PANEL Power Meters indication from real (KW) to reactive (KVAR) load display.

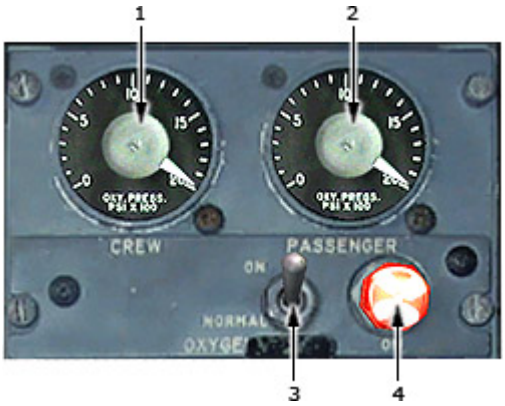
7,8. Synchronizing Lights (Clear)

Connected between the bus tie and the position of the AC meters selector. Blink rate is proportional to frequency differences.

9. AC Meters Selector

Selects source of AC power to be monitored on AC voltmeter and frequency indicator.

U05. OXYGEN PRESSURE PANEL



1. Flight Crew Oxygen Pressure Indicator
2. Passenger Oxygen Pressure Indicator
3. Passenger Oxygen Switch
4. Oxygen Pressure Indicating Light

1. Flight Crew Oxygen Pressure Indicator

This indicator marked OXYGEN SYSTEM, CREW is on the Second Officer's upper panel. The indicator is scaled 0-20 (0-2000 PSI) and indicates pressure in the cylinder and/or line. The pressure transmitter for this indicator is located downstream of the oxygen cylinder shutoff valve and is common to the indicator on the external charging panel.

Electrical power is necessary for proper indication.

2. Passenger Oxygen Pressure Indicator

This indicator marked OXYGEN SYSTEM, PASSENGER is on the Second Officer's upper panel. The indicator is scaled 0-20 (0-2000 PSI) and indicates pressure in the cylinders. The pressure transducer for this indicator is common to the indicator on the external charging panel.

3. Passenger Oxygen Switch

The passenger oxygen switch marked OXYGEN SYSTEM, with ON-NORMAL positions, is on the Second Officer's upper panel and is lockwired to the NORMAL position. This switch when placed in the ON position, supplies power to the solenoid which operates the electro-pneumatic unit and actuates the passenger oxygen system. This switch may be used at the discretion of the flight crew or in the event that both automatic valves fail to open during an emergency.

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DO NOT USE FOR FLIGHT

4. Oxygen Pressure Indicating Light

This light illuminates when the passenger oxygen system low pressure distribution system is pressurized.

U06. AFT CABIN ZONE TEMPERATURE CONTROL PANEL

1. Auto Pack Trip Cutout Switch
2. Valve Position Indicator
3. Aft Cabin Zone Temperature Switch
4. Aft Cabin Zone Overheat Light

1. Auto Pack Trip Cutout Switch

NORMAL - auto pack trip system will arm for takeoff.

CUTOUT - auto pack trip system deactivated.

2. Valve Position Indicator

When the aft zone is selected cooler than the forward zone, the pointer will be to the left, indicating the forward zone control is open. The pointer will be in the middle when both zone control valves are closed. When the aft zone is selected warmer, the aft zone control valve opens and the pointer will be to the right.

3. Aft Cabin Zone Temperature Switch

This spring-loaded to neutral switch on the Second Officer's upper panel has momentary COOLER and WARMER positions. The switch is used to balance the aft cabin temperature.

With the switch in the COOLER position, the forward zone heat valve will open. With the switch in the WARMER position, the aft zone heat valve will open.

4. Aft Cabin Zone Overheat Light

This amber light will illuminate when the temperature in either forward or aft conditioned air supply duct becomes excessive (190°C), driving the appropriate zone control valve closed.

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U07. START VALVE OPEN LIGHTS

1-3. Start Valve Open Lights (amber)

1-3. Start Valve Open Lights (amber)

An engine START VALVE OPEN light is on the Second Officer's lower panel directly above the door annunciator panel.

The purpose of the light is to provide the flight crew with indication of start valve position.

The three (3) lights are connected individually to each start valve. The appropriate light will be illuminated when the start valve is open.

A placard under each light states START VALVE OPEN.

U08. SMOKE DETECTION SYSTEM PANEL

1-7. Smoke Detection System

8,9. Secondary Main Landing Gear Position Indicator Lights (green)

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DO NOT USE FOR FLIGHT

U09. WING ANTI-ICE AUTO TRIP-OFF AND FIRE WARNING PANEL

1-3. Strut and Lower Aft Body Overheat Lights

4. Wing Anti-Ice Auto Trip-Off Switch

5. Wing Anti-Ice Auto Trip-Off Light (Amber)

6. Overheat Test Switch

1-3. Strut and Lower Aft Body Overheat Lights

Three amber lights will illuminate when overheat conditions exceeding approximately 204°C in the strut, or 124°C in a keel beams area and lower aft section (aft cargo and rear entry stairs), are detected.

4. Wing Anti-Ice Auto Trip-Off Switch

Since a portion of the wing anti-ice ducting is located in the pressurized area of the aircraft, a rupture in that area would cause a rapid increase in cabin pressure. This procedure rise would cause the Wing Anti-Ice Auto Trip Off system to close the wing anti-ice valves halting the pressure rise. Pressurization air could then enter the ruptured duct and flow overboard through the wing ducting causing a proportional decrease in cabin pressure. After a trip off or system test, the system can only be reset on the ground. This system can be tested on the ground by the S/O by placing the test switch to the GROUND TEST position and observing the illumination of the TRIP light. Moving the switch to the GROUND RESET position will reset the system.

GROUND TEST – Simulate trip condition.

NORMAL - System armed

GROUND RESET - Resets trip light and wing anti-ice valves after trip or test. Reset can only be accomplished on the ground.

5. Wing Anti-Ice Auto Trip-Off Light (Amber)

ILLUMINATED - Wing anti-ice duct rupture. All wing anti-ice valves close.

6. Overheat Test Switch

A test button adjacent to the overheat lights is provided to test continuity in the detection elements and associated wiring, and satisfactory control unit and lights operation.

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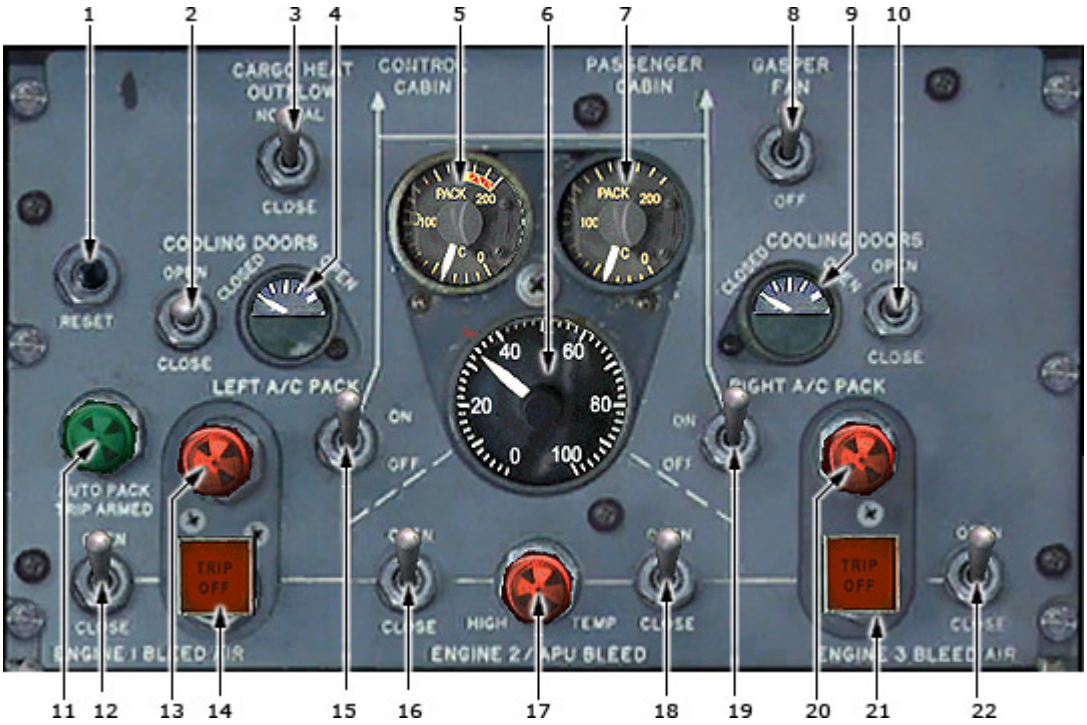
U10. PNEUMATIC SYSTEM PANEL



1. Air Conditioning Pack Reset Switch
2,10. Cooling Doors Switch
3. Cargo Heat Outflow Switch
4,9. Cooling Doors Position Indicators
5,7. Pack Temperature Indicators
6. Pneumatic Duct Pressure Indicator
8. Gasper Fan Switch
11. Auto Pack Trip Armed Light
12,16,18,22. Engine Bleed Valve Switches
13,20. Air Conditioning Pack Trip Off Lights
14,21. Bleed Air Trip Off Light
15,19. Pack Switches
17. Bleed Air High Temperature Light

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1. Air Conditioning Pack Reset Switch

Operating the switch will restore normal operation of the air conditioning pack or engine bleed air supply, after a trip by either an overtemp or an auto pack trip.

The air conditioning pack trip off lights will extinguish when the pack is reset.

After an overheat trip, the reset switch will restore normal operation of the air conditioning pack and extinguish the overheat light after the pack has cooled below the overheat temperature.

4,9. Cooling Doors Position Indicators

A pointer on the indicator reflects cooling doors position.

5,7. Pack Temperature Indicators

Two indicators on the Second Officer's upper panel indicate left and right pack air cycle machine compressor discharge temperatures. The temperature sensors are located between the compressor and the secondary heat exchanger of the respective packs. The indicators are used to monitor pack operation. Pack temperatures should be 30° - 40°C for optimum operation.

6. Pneumatic Duct Pressure Indicator

Indicates pneumatic duct pressure sensed at points indicated by dotted lines on panel. Pressure monitored to indicate proper operation of bleed air system, APU, or external air source for engine starting and air conditioning.

12,16,18,22. Engine Bleed Valve Switches

A bleed valve is installed on each engine to permit shutting off the entire supply of bleed air from the engine into the pneumatic duct. The valves are controlled by the bleed air switches on the Second Officer's upper panel - one switch for #1 and one for #3 and two switches for #2 engine.

The valves on engines #1 and #3 will override closed in the event of bleed air overtemperature, or if the respective fire selector is pulled.

13,20. Air Conditioning Pack Trip Off Lights

Amber lights marked TRIP OFF for each air conditioning pack are on the Second Officer's upper panel.
These lights will illuminate when an overheat condition occurs in the main distribution duct, the air cycle machine (ACM) turbine inlet, or the ACM compressor discharge duct.

14,21. Bleed Air Trip Off Light

Two square amber lights, marked TRIP OFF, are located adjacent to the #1 and #3 Engine Bleed Air Switches. A bleed air overtemperature will cause the TRIP OFF light(s) to illuminate and the respective engine bleed valve(s) to automatically close.

The valve may be reopened and the light reset (provided temperature is below trip off value) by depressing the reset switch.

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U11. PRESSURIZATION SYSTEM PANEL

1,9. Control Cabin and Passenger Cabin Duct Overheat Lights
2,8. Control Cabin and Passenger Cabin Temperature Selectors
3,7. Control Cabin and Passenger Cabin Air Mix Valve Indicators
4. Air Temperature Indicator
5. Duct Overheat Reset Switch
6. Air Temperature Selector Switch
10. Altimeter and Differential Pressure Gauge
11. Rate Decrease/Increase Knob
12. Cabin Pressure Control Indicator
13. Barometric Correction Setting Knob
14. Cabin Altitude Knob
15. Cabin Rate of Climb Indicator
16. Altitude Horn Cutout Switch
17. Cabin Pressure Control Mode Selector Knob and Indicator
18. Cargo Door Light (amber)

1,9. Control Cabin and Passenger Cabin Duct Overheat Lights

Amber lights for each air conditioning distribution duct marked DUCT OVERHEAT are on the Second Officer's upper panel. These lights will illuminate if the duct temperature exceeds 86°C. Simultaneously, the respective air mix valve will be driven to the full cold position.

This trip condition may be reset with the duct overheat reset switch, provided the duct temperature has dropped below 88°C.

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2,8. Control Cabin and Passenger Cabin Temperature Selectors

The control cabin and passenger cabin temperature selectors are on the Second Officer's upper panel. These selectors electrically control the air mix valves through individual cabin temperature regulators. The scale on each selector has an automatic range which allows a choice of cabin temperatures.

The position of the air mix valves can be manually controlled with the selector knob in the appropriate manual position, cool or warm. The knob is spring-loaded to OFF from the MANUAL COOL or MANUAL WARM positions.

3,7. Control Cabin and Passenger Cabin Air Mix Valve Indicators

The indicators marked CONTROL CABIN AIR MIX VALVE and PASSENGER CABIN AIR MIX VALVE with a range from COLD to HOT are on the Second Officer's upper panel. Their function is to display the position of their respective air mix valves.

4. Air Temperature Indicator

A temperature indicator on the Second Officer's upper panel is calibrated from 0-100°C. It indicates temperature in the duct or cabin area selected with the air temperature selector.

5. Duct Overheat Reset Switch

The duct overheat reset switch marked RESET is on the Second Officer's upper panel. This switch is used whenever an overheat condition is indicated by illumination of passenger or control cabin duct overheat lights.

Illumination of either of these lights occurs when the overheat condition in the main supply duct causes the air mix valves to drive to the full cold position. When duct temperature is lowered, use of the reset switch will return the system to normal and extinguish the duct overheat lights.

6. Air Temperature Selector Switch

A selector marked AIR TEMP on the Second Officer's upper panel has FWD SUPPLY--AFT SUPPLY-MAIN SUPPLY-AFT CAB-FWD CAB positions.

The indicator will display temperature of the selected area.

10. Altimeter Differential Pressure Gauge

An altimeter differential pressure gauge is on the Second Officer's upper panel. The dual altimeter and differential pressure gauge registers cabin altitude and pressure difference between cabin and ambient.

The gauge has two concentric scales and two pointers. The short pointer indicates cabin altitude on the inner scale and the longer pointer indicates pressure differential on the outer scale.

11. Rate Increase/Decrease knob

Adjusts the cabin climb or descent rate in automatic cabin pressure control mode

12. Cabin Pressure Control Indicator

The combined indicator displays the selected maximum cabin altitude, the maximum flight altitude attainable for selected maximum cabin altitude and maximum differential pressure limit, and a barometric correction scale.

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13. Barometric Correction Setting Knob

A knob and indicator on the Second Officer's upper panel are used to introduce the altimeter setting into the controller. This setting should be the same as the pilots' altimeters.

14. Cabin Altitude Knob

Selects the maximum cabin altitude for the automatic cabin pressure control.

15. Cabin Rate of Climb Indicator

A rate of climb indicator shows rate of cabin pressure (altitude) change and is used as a reference in operating the cabin pressurization system.

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DO NOT USE FOR FLIGHT

FLIGHT ENGINEER LOWER PANEL

W01. Fuel System Panel
W02. Clocks
W03. Hydraulic Brake Panel
W04. Engine Oil Panel
W05. S/O Panel Lighting Controls
W06. Service Interphone Switch
W07. Door Annunciator Panel
W08. Audio Selector Panel
W09. Fuel Heat Panel
W10. Hydraulic Panel
W11. Oxygen Panel
W12. Oil Cooler Panel

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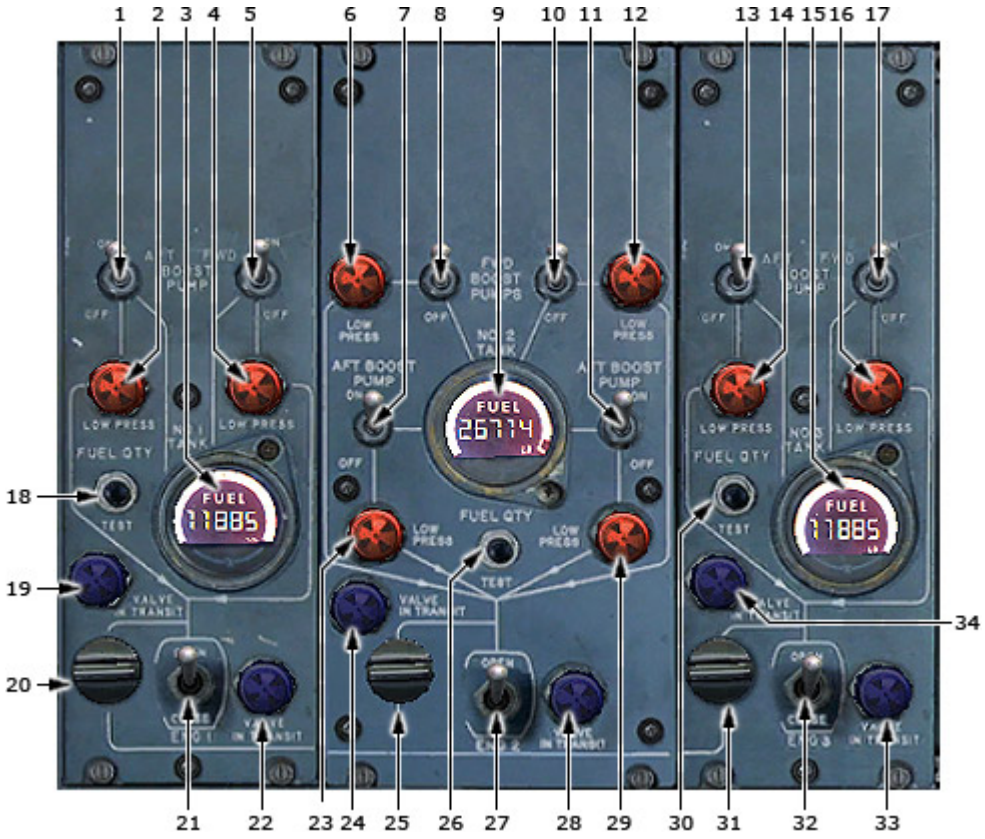
DO NOT USE FOR FLIGHT

W01. FUEL SYSTEM PANEL



1,5,7,8,10,11,13,17. Fuel Boost Pump Switch
2,4,6,12,14,16,23,29. Fuel Boost Pump Low Pressure Light (Amber)
3,9,15. Tank Quantity Indicator
18,26,30. Fuel Tank Quantity Indicators Test Switch
19,24,34. Fuel Crossfeed Manifold Valve in Transit Light (Blue)
20,25,31. Fuel Crossfeed Manifold Valve Switch
21,27,32. Engine Fuel Shutoff Valve Switch
22,28,33. Engine Fuel Shutoff Valve in Transit Light (Blue)

1,5,7,8,10,11,13,17. Fuel Boost Pump Switch

ON - for fuel boost pump operation.

2,4,6,12,14,16,23,29. Fuel Boost Pump Low Pressure Light (Amber)

Indicates low boost pump discharge pressure from respective pump.

3,9,15. Tank Quantity Indicator

Individual indicators for each tank are on the S/O panel. Individual indicator's are installed at the fueling station. These indicators are calibrated to depict pounds of usable fuel in tanks.

The indicators on the S/O panel operate on airplane, external, or APU power. The fuel quantity indicators at the refueling panel operate on external or APU power only and require the POWER switch be in the ON position.

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18,26,30. Fuel Tank Quantity Indicators Test Switch

Respective quantity indicator drives toward zero. Drives fueling station indicator pointer up the scale. Pointer returns to original position after switch released.

19,24,34. Fuel Crossfeed Manifold Valve in Transit Light (Blue)

ON – during respective valve transit
OUT – after valve attains new position.

20,25,31. Fuel Crossfeed Manifold Valve Switch

Switch shown closed. Bar align with fuel flow line when open.
OPEN – opens valve to crossfeed manifold to supply fuel to other engines from respective tank.

21,27,32. Engine Fuel Shutoff Valve Switch

Operates respective engine fuel shutoff valve. Must be open for engine operation valve overrides closed when respective engine fire switch pulled, or engine start lever in cutoff.

22,28,33. Engine Fuel Shutoff Valve in Transit Light (Blue)

ON – during respective valve transit.
OUT – after valve attains new position.

W02. CLOCKS

1. Sweep Second Hand
2. Hour Hand
3. Minute Hand

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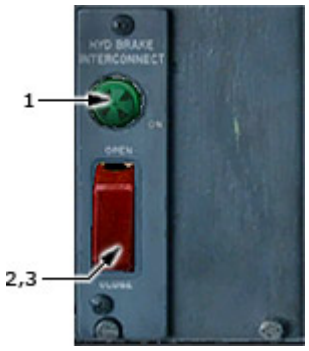
W03. HYDRAULIC BRAKE PANEL



1. Hydraulic Brake Interconnect Light
2. Hydraulic Brake Interconnect Switch
3. Switch Guard

1. Hydraulic Brake Interconnect Light

This green light on the S/O lower panel is marked HYD BRAKE INTERCONNECT, ON.

When the switch is in the OPEN position, the green light will illuminate if the hydraulic brake interconnect valve is fully open.
When the switch is in the CLOSE position, the light will extinguish only when the valve is fully closed.

2. Hydraulic Brake Interconnect Switch

This switch on the S/O lower panel is marked HYD BRAKE INTERCONNECT and has OPEN-CLOSE positions. The switch is normally guarded in the CLOSE position.

When the switch is in the OPEN position, the hydraulic brake interconnect valve is open and system A hydraulic pressure will energize the hydraulic brake system.

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DO NOT USE FOR FLIGHT

W04. ENGINE OIL PANEL

1,2,3. Oil Quantity Instrument

4,5,6. Oil Temperature Indicator

7,8,9. Oil Pressure Indicator

10. Oil Quantity Test Switch

1,2,3. Oil Quantity Instrument

The oil quantity instruments (measured in gallons) indicate the usable quantity of oil remaining.
It is recommended to have at least 5 quarts before starting and at least 3 gallons when engines stabilize at idle RPM.

Normal oil consumption is between Vi U.S. pint per hour and one U.S. quart per hour in normal operation. An engine which exceeds two U.S. quart; per hour over a ten hour period shall be investigated.

4,5,6. Oil Temperature Indicator

Oil temperature is measured at the outlet of the fuel/oil heat exchanger. Maximum oil temperature for all operating conditions is 120°C.

Note:
Up to 157°C is allowed for a 15-minute period.

7,8,9. Oil Pressure Indicator

The normal operating oil pressures are 40 to 55 PSI.

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DO NOT USE FOR FLIGHT

W05. S/O PANEL LIGHTING CONTROLS

1. Panel Fluor Lights Switch
2. Circuit Breaker Control Switch
3. S/O Panel White Background Lights Control
4. S/O Panel Lights Control
5. S/O Panel Red Table Lights Control

1. Panel Fluor Lights Switch

Controls white fluorescent lights under light shield.

W07. DOOR ANNUNCIATOR PANEL

1. FWD Entry
2. L Gear Door
3,9. Aft Airstair
4. Cargo V Closed
5. L Service Door
6. Nose Gear Door
7. Equip Access
8. Aft Entry
10. Tail Slid
11. Galley
12. FWD Cargo
13. R Gear Door
14. APU
15. Aft Cargo
16. R Service Door

3,7,14. Landing Gear Door Annunciators

Three annunciators on the S/O lower panel marked L MAIN GR DOOR, NOSE GEAR DOOR and R MAIN GR DOOR wll illuminate when the corresponding doors are not up and locked.

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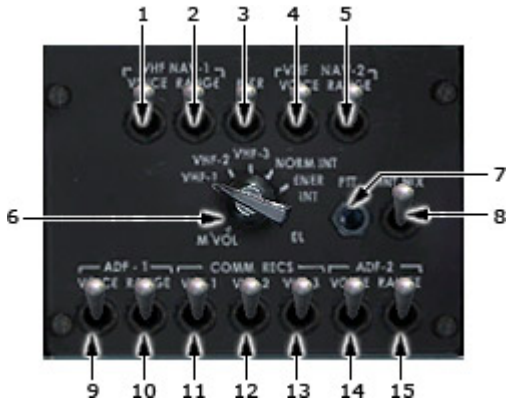
W08. AUDIO SELECTOR PANEL



1-5, 9-15. Communication Receiver Switches

6. Transmitter Selector

7. Microphone Push-to-talk Switch

8. Mic Selector Switch

1-5, 9-15. Communication Receiver Switches

Switches on each audio selector panel are used to connect audio from a selected facility to the associated crew member's headphones (or loudspeaker at the Captain's, F/O's stations).

Any one or any combination of audio facilities can be monitored by moving the appropriate switches to the UP position, provided the emergency audio switch is in NORM position.

6. Transmitter Selector

Selects desired transmitter.

7. Microphone Push-to-talk Switch

Press to transmit through oxygen mask or boom microphone.

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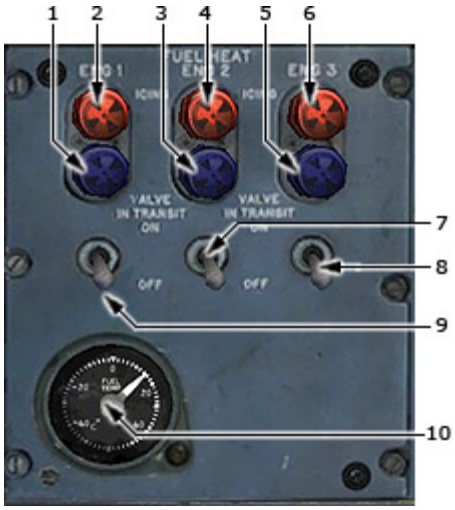
W09. FUEL HEAT PANEL



1,3,5. Fuel Heat Valve Light

2,4,6. Fuel Icing Caution Light

7,8,9. Fuel Heat Switch

10. #1 Tank Fuel Temperature Indicator

1,3,5. Fuel Heat Valve Light

These lights marked FUEL HEAT VALVE, ENG 1, ENG 2, ENG 3 are on the Second Officer's lower panel. When the fuel heat switch is placed in the ON position, the light will illuminate bright while the valve is in transit, then dim when the valve is fully open. When the fuel heat switch is placed to the OFF position, the light illuminates bright while the valve is in transit, then extinguishes when the valve is fully closed.

On some aircraft, a green light illuminates when the fuel heat valve is open. There is no transit function.
On some aircraft, a blue light illuminates when the fuel heat valve is in transit. The light is extinguished when the valve position agrees with the selected switch position.

2,4,6. Fuel Icing Caution Light

These amber lights marked FUEL HEAT ICING, ENQ 1, ENQ 2, ENQ 3 are on the Second Officer's lower panel. The light is controlled by a differential pressure switch located by the fuel filter. The switch closes at a differential pressure of 5 PSI (illuminating the light) and opens at 3 PSI (extinguishing the light).

7,8,9. Fuel Heat Switch

These switches, marked FUEL HEAT, ENG I, ENG 2. ENG 3 with ON-OFF positions are on the Second Officer's lower panel. With the switch in the ON position, the hot air valve of the fuel heater is opened, permitting the flow of the 13th stage bleed air through the fuel heater. Positive indicators of fuel heat application will be a drop in EPR of approximately .03 and a rise in engine oil temperature.

10. #1 Tank Fuel Temperature Indicator

The fuel temperature in #1 tank is displayed on an indicator installed on the Second Officer's panel. The indicator dial has a scale range of 56°C to -56°C.

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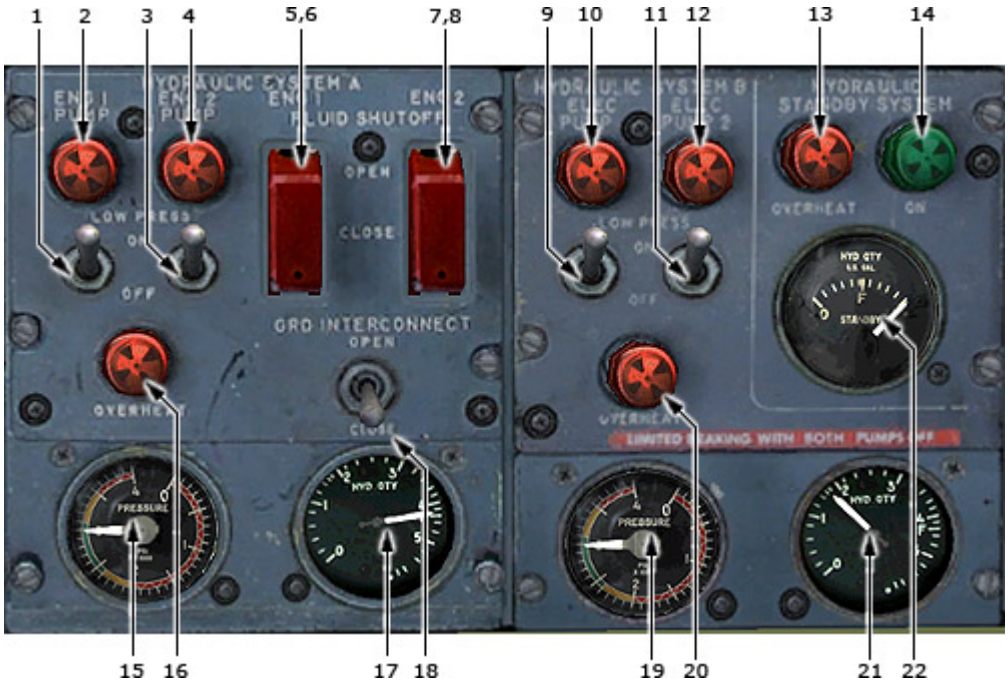
W10. HYDRAULIC PANEL



1,3. System A Pump Switches

2,4. System A Pump Low Pressure Lights

5,7. System A Fluid Shutoff Switch

6,8. Switch Guard

9,11. System B Pump Switches

10,12. System B Pump Low Pressure Lights

13. Standby System Overheat Light

14. Standby System Light

15. System A Pressure Gauge

16. System A Overheat Light

17. System A Quantity Indicators

18. Ground Interconnect Switch

19. System B Pressure Gauge

20. System B Overheat Light

21. System B Quantity Indicator

22. Standby Hydraulic System Quantity Indicator

1,3. System A Pump Switches

Two switches on the S/O lower panel have ON-OFF positions.

In the OFF position, a solenoid will be energized to block the pump output and depressurize the pump.

2,4. System A Pump Low Pressure Lights

Two amber lights marked ENG 1 PUMP, ENG 2 PUMP, LOW PRESS are on the S/O lower panel.
A pressure switch in each pump output line operates the lights.

The light will illuminate when the corresponding pump output pressure is insufficient, or when the applicable pump is off.

5,7. System A Fluid Shutoff Switch

These switches marked FLUID SHUTOFF, ENG 1 and ENG 2, with OPEN-CLOSE positions on the S/O lower panel control the fluid shutoff valves in the supply line of each engine driven pump.

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The switches are guarded OPEN.

In the CLOSE position supply to the corresponding system A pump will be shut off.
With the engine fire switch pulled on engine No. 1 or engine No. 2, the fluid shutoff valve will be closed, regardless of fluid shutoff switch position.

9,11. System B Pump Switches

Two switches on the S/O lower panel with ON-OFF positions control operation of the system B electric motor driven hydraulic pumps, through a power relay.

The switches also control power to the respective system B overheat light.

10,12. System B Pump Low Pressure Lights

Two amber lights marked ELEC PUMP 1, ELEC PUMP 2, LOW PRESS. The light will illuminate when the applicable system B hydraulic pump output pressure is below 1100 PSI or when the pump is off. The light extinguishes when pressure is above 1500 PSI.

A pressure switch in each pump output line operates the light. Electrical power is DC1 and DC2 respectively.

13. Standby System Overheat Light

This amber light on the S/O lower panel is marked OVERHEAT. The light will illuminate when the standby system return fluid temperature is excessive (104°C). It extinguishes when temperature drops below 74°C.

14. Standby System Light

The light will illuminate when the standby system is pressurized.

15. System A Pressure Gauge

This electrical gauge on the S/O lower panel indicates hydraulic system pressure or accumulator preload depending on whether or not system A is pressurized.

The gauge will read ZERO if accumulator preload is lost regardless of actual hydraulic pressure.
A/C 32724 and following have no accumulator thus, when system is unpressurized, the gauge will read ZERO.

16. System A Overheat Light

The light will illuminate (104°C) when system A return fluid temperature is excessive (extinguishes at 74°C).

17. System A Quantity Indicators

The system A quantity indicating system consists of a float type level transmitter with a direct reading gauge at the reservoir and two remote indicators located as follows: One is on the S/O lower panel and one at the hydraulic servicing station.

Normal reading is 4.4 gallons (F) on the ground.

The direct reading gauge and the indicator at the service station have a refill (RF) mark at the 3 gallon level. Extension of the leading edge flaps and slats will decrease the indicated quantity by approximately .8 gallons.

Additionally, cold soak caused by long periods of cruise at low outside are temperatures will cause a gradual reduction in indicated quantity of approximately 1.0 gallon. This indicated loss will be regained when the fluid temperature increases.

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19. System B Pressure Gauge

This electrical gauge on the S/O lower panel indicates hydraulic system pressure or accumulator preload depending on whether or not system B is pressurized

The gauge will read ZERO if accumulator preload is lost regardless of actual hydraulic p. assure.

20. System B Overheat Light

The light will illuminate (104°C) when system A return fluid temperature is excessive (extinguishes at 74°C).

21. System B Quantity Indicator

System B quantity indicator is on the S/O lower panel. Normal reading is 1.8 gallons (F).

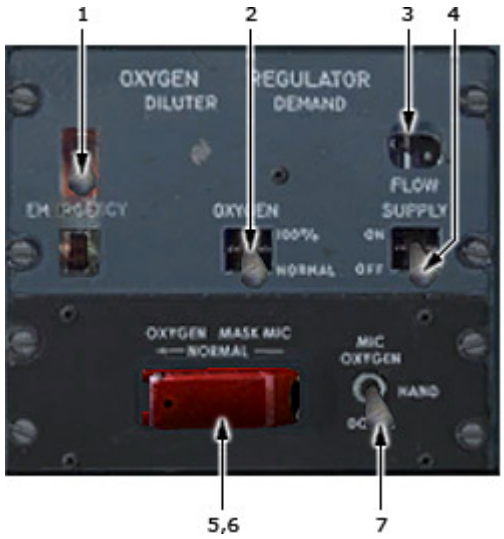
No quantity indication is provided for the hydraulic fluid in the auxiliary reservoir.

The system B main and auxiliary reservoirs will be maintained at the full level when the system A hydraulic quantity indicator indicates above 2.5 gallons. The essential DC bus supplies electric power for quantity gauges.

22. Standby Hydraulic System Quantity Indicator

1. 0.52 US gal full
2. 0.28 US gal minimum dispatch quantity

W11. OXYGEN PANEL



1. Oxygen Emergency Lever
2. Oxygen Diluter Lever
3. Oxygen Flow Indicator
4. Oxygen Supply Lever
5. Oxygen Mask MIC Switch
6. Switch Guard
7. MIC Oxygen Switch

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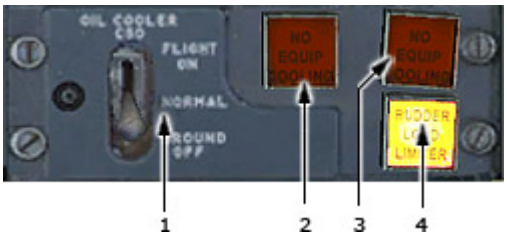
W12. OIL COOLER PANEL



1. Oil Cooler Selector Switch (CSD)

2,3. No Equipment Cooling Light (Amber)

4. Rudder Load Limiter Light

1. Oil Cooler Selector Switch (CSD)

FLIGHT ON –
Turns on cooler ejector in-flight for additional CSD oil cooling.

NORMAL –
Cooler off in flight, ON on ground. On causes ejector to pull cooling air across heat exchange.

GROUND OFF -
Ejector off. Automatically resets to normal on takeoff

2,3. No Equipment Cooling Lights (Amber)

ON - indicates no airflow in equipment cooling duct.

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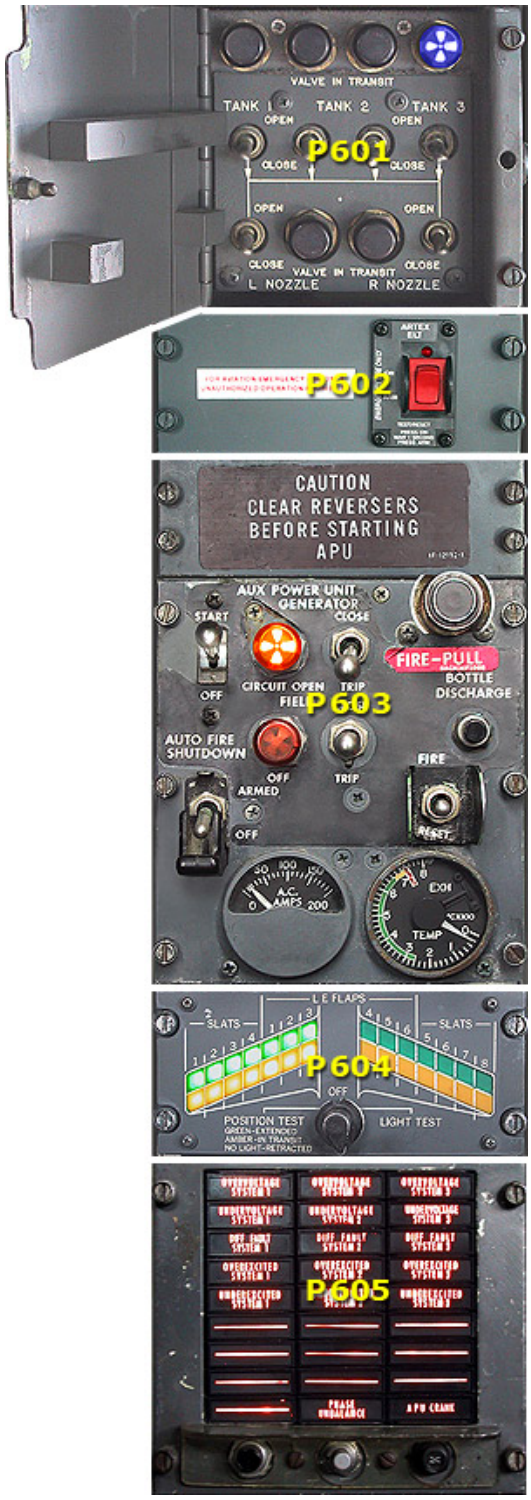
SECOND OFFICER'S AUXILIARY PANEL



P601. Fuel Dump Panel
P602. E.L.T. (Emergency Locator Transmitter)
P603. APU Control Panel
P604. Leading Edge Devices Annunciator Panel
P605. Electrical System Fault Annunciator Panel

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P601. FUEL DUMP PANEL

1-4. Fuel Dump Valve In Transit Light

5,6,7,8. Fuel Dump Valve Switch

9,12. Fuel Dump Nozzle Valve Switch

10,11. Fuel Dump Nozzle Valve In Transit Light (Blue)

1-4. Valve In-Transit Lights

A valve in-transit light will illuminate when the corresponding switch is actuated and remains on until the valve reaches the full OPEN and CLOSE position as selected.

5,6,7,8. Fuel Dump Valve Switches

Four fuel dump valve switches are marked TANK 1, TANK 2 and TANK 3 and have OPEN-CLOSE positions.

Their respective valve in-transit lights adjacent to the switches are marked VALVE IN-TRANSIT.

There is one switch and one light each for tank No. 1 and No. 3 and two switches and two lights for tank No. 2 fuel dump system.

These switches actuate the fuel tank dump valve to permit or stop the flow of fuel from the fuel tank to the dump system.

9,12. Fuel Dump Nozzle Valve Switch

Two fuel dump nozzle valve switches and their adjacent lights are marked L NOZZLE, R NOZZLE. The lights are also marked VALVE IN-TRANSIT.

The switches have OPEN—CLOSE positions.

These switches actuate the fuel dump nozzle valves at the wing tips to open or close the valves.

With the fuel dump valve switches in the OPEN position, fuel under pressure is in the fueling-dumping manifold. With the fuel dump nozzle valve switch in the OPEN position, fuel will be dumped from the airplane as long as automatic shutoff conditions are not encountered.

With the fuel dump nozzle valve switch in the CLOSE position, fuel is stopped from dumping and held under pressure in the fueling-dumping manifold.

Note:

The fuel dump panel cover is constructed such that it cannot be closed unless all the fuel dump valve and dump nozzle valve switches are in the CLOSE position.

10,11. Fuel Dump Nozzle Valve In Transit Light (Blue)

A valve in-transit light will illuminate when the corresponding switch is actuated and remains on until the valve reaches the full open or close positions as selected.

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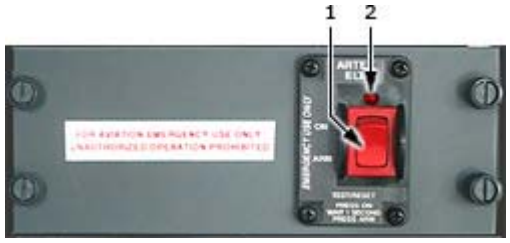
P602. E.L.T. (EMERGENCY LOCATOR TRANSMITTER)



1. E.L.T. (Emergency Locator Transmitter) Control Switch.

2. LED Light

2. LED Light

The red LED will illuminate if the switch is turned to on or if the E.L.T. is triggered from an impact.

P603. APU CONTROL PANEL

1. APU Master Switch

2. APU Generator Breaker Light

3. APU Generator Field Light

4. Fire Switch

5. APU Generator Breaker Switch

6. Bottle Discharge Switch

7. APU Generator Field Switch

8. Auto Fire Shutdown Arming Switch

9. Switch Guard

10. Fire Warning Test-Reset Switch

11. APU Ammeter

12. APU Exhaust Gas Temperature Indicator

1. APU Master Switch

This switch with OFF--ON--START positions is on the APU control panel.

With this switch in the OFF position, the APU stops as a result of the following automatic actions: the pneumatic solenoid actuates the 110% speed switch which opens power to the APU fuel solenoid valve and the bleed air solenoid valve. The generator breaker is tripped.

When the APU engine slows down, the low oil pressure switch closes the APU fuel valve.

With the APU master switch in the OFF position, the APU fire warning and extinguishing system remain energized from the battery bus.

With the master switch in the ON position, if the battery switch is in the ON position, the APU fuel valve opens, and if power is on the Nol. 1 DC bus, the APU light illuminates.

With the master switch in the START position and the battery switch in the ON position, the following actions will take place and the APU will start: the APU starter motor is energized, the APU begins cranking and the APU crank light illuminates.

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When oil pressure builds up, the ignition is energized, the fuel solenoid valve opens, fuel is injected and ignited. At approximately 35% of governed speed, the start motor is de-energized and the APU crank lights goes out.

2. APU Generator Breaker Light

This amber light marked GENERATOR is adjacent to the APU generator breaker switch. When the light illuminates, it indicates that the generator breaker is tripped. This light will not be illuminated if the APU switch is in the OFF position.

3. APU Generator Field Light

This amber light adjacent to the APU generator field switch, when illuminated, indicates that the generator field is de-energized.

4. Fire Switch with Fire Warning Light (Red)

When pulled, will arm the respective APU bottle discharge switch, trip the APU generator field relay and close the APU fuel shut-off and bleed air valve.

ILLUMINATED - Indicates fire in APU shroud. Fire alarm bell (in cockpit) and intermittent APU fire warning horn (in nose wheel well) also sound. Master Fire Warning Lights also illuminate.

5. APU Generator Breaker Switch

This toggle lock switch marked GENERATOR with CLOSE-TRIP positions is on the APU control panel.
With this switch in the CLOSE position the APU generator is connected to the airplane electrical distribution system if the APU is operating at governed speed; external power is off and engine generator breakers are tripped.

With this switch in the TRIP position the APU generator is tripped. (The APU generator breaker is automatically tripped by placing the external power switch ON, or by moving the engine generator breaker to CLOSE.

6. Bottle Discharge Switch

Armed only if APU fire twitch pulled.

7. APU Generator Field Switch

This toggle lock switch marked FIELD with CLOSE—TRIP positions is on the APU control panel.

With this switch in the CLOSE position the field is closed. In the TRIP position, the field is tripped (the generator breaker is then tripped automatically).

The field of the APU generator normally will remain closed so that the voltage build up is automatic when the APU is being started.

8. Auto Fire Shutdown Arming Switch

ARMED – a fire warning or test will automatically shut down APU.

OFF – automatic shutdown deactivation.

Note:
If shutdown is initiated by other fire switch or automatic fire shutdown relay, the fuel shutoff valve will close immediately accompanied by other normal shutdown actions.

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10. Fire Warning Test-Reset Switch

TEST - Heats fire detector to trigger fire warning system.

CAUTION: LIMIT TEST TIME TO 60 SECONDS.

RESET - Will silence fire warning bell and horn, and extinguish Master Fire Warning Light. When APU Fire Warning Light is extinguished, resets automatic fire shutdown to allow starting the APU.

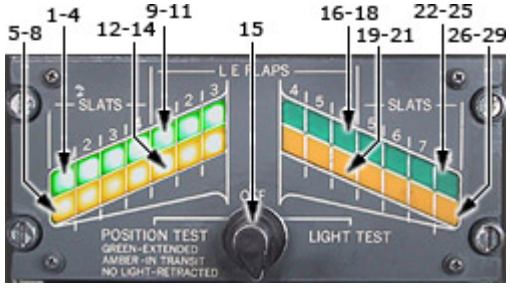
11. APU Ammeter

The APU ammeter indicates electrical APU (or external power) load on Phase B.

12. APU Exhaust Gas Temperature Indicator

This indicator calibrated in degrees centigrade indicates the exhaust gas temperature sensed by the thermocouple on the exhaust flange of the turbine casing.

P604. LEADING EDGE DEVICES ANNUNCIATOR PANEL



1-4, 9-11, 16-18, 22-25. Green Leading Edge Flap/Slat Light

5-8, 12-14, 19-21, 26-29. Amber Leading Edge Flap/Slat Light

15. Leading Edge Devices Annunciator Switch

This panel contains 14 amber lights, one for each leading edge flap or slat, 14 green lights and a switch.

The switch has POSITION TEST-OFF-LIGHT TEST positions and is spring-loaded to the OFF position.

All lights should illuminate when the switch is in the LIGHT TEST position.

When the switch is in the POSITION TEST position, a green light indicates that the corresponding leading edge device is extended. An amber light indicates the IN TRANSIT position and no light indicates the retracted position of the corresponding leading edge flap or slat.

When the switch is in the OFF position, all lights are out.

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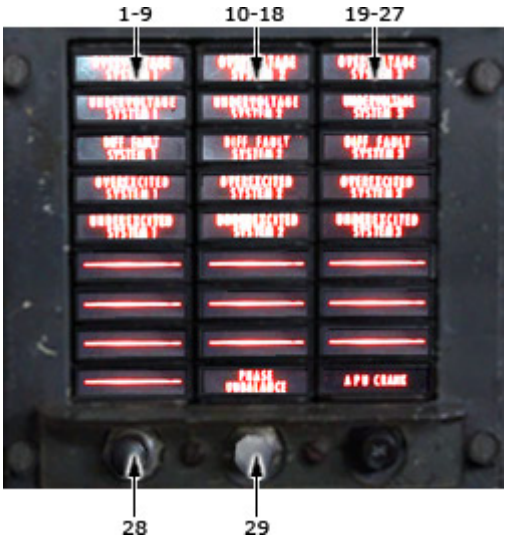
P605. ELECTRICAL SYSTEM FAULT ANNUNCIATOR PANEL



1-26. Annunciator Lights

27. APU Crank Annunciator Circuit Breaker

28. Reset Switch

29. Test Switch

1-27. Annunciator Lights

APU Crank Light

During APU starts, illumination of this light indicates starter operation. This light illuminates when a start is initiated and goes out when the starter motor is de-energized. (At approximately 35% of governed speed).

28. Reset Switch

Used to extinguish an annunciator light and reset annunciator system after a fault has bean corrected or de-energized.

Note: A differential fault annunciator cannot be reset with the switch.

29. Test Switch

Used for testing annunciator panel lights. When depressed all annunciator lights will illuminate.

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